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ABSTRACT

A study examined the effects of career guidance and counseling on intermediate outcomes measured while respondents remained in high school and on employment and educational outcomes measured after respondents left high school. Data from the 1980 sophomore and senior cohorts of the High School and Beyond database were subjected to multivariate analyses. These analyses strongly replicated findings of past research regarding the impact of status background and personal characteristics on career expectations and performance measures. These variables also affected college-going behavior and exhibited smaller and more erratic patterns of effects on early labor market variables (hours and weeks worked and unemployment, but not wage). Career expectation variables and perceived ability to complete college also exhibited strong positive effects on college attendance measures and tended to have negative effects on the work variables, whereas general attitudes such as self-esteem and locus of control did not have strong effects on post-high school job or education outcomes. The effects of guidance program variables, on the other hand, are rather small and manifest some erratic patterns. Youth who attended schools emphasizing counseling tended to have higher career goals and attend college more than other youth, and youth who attended schools for which counselor respondents expressed positive attitudes about the guidance program also tended to have higher career goals and college attendance. Youth attending schools emphasizing occupational information, however, had lower growth on test scores than did other youth. Recommendations for improving career guidance programs are included. A seven-page list of references concludes the document. (MN)

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# Outcomes of Career Guidance and Counseling

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# OUTCOMES OF CAREER GUIDANCE AND COUNSELING

Lawrence Hotchkiss
Louise Vetter

The National Center For Research in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, OH  43210-1090

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# FOREWORD

Interest in the outcomes of career guidance and counseling programs has been substantially increased by the mandates of the Carl D. Perkins Vocational Education Act of 1984. A strong research base is needed by the researchers, policymakers, administrators, and guidance personnel who are in the process of establishing guidelines and standards for comprehensive career guidance and counseling programs.

This research report, sponsored by the U.S. Department of Education, Office of Vocational and Adult Education, summarizes the literature to date and adds the results of a study of career guidance programming utilizing the High School and Beyond (HSB) national database. The National Center for Research in Vocational Education is pleased to provide this report for the use of researchers, policymakers, and professional organizations in the career guidance and counseling field.

The National Center is indebted to N. L. McCaslin, Associate Director, Evaluation and Policy Studies Division; Louise Vetter, Senior Research Specialist, who directed this project; and Lawrence Hotchkiss, Research Specialist II, who developed the research models and conducted the analyses for the project.

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Chester K. Hansen
Acting Executive Director
The National Center for Research
in Vocational Education

# EXECUTIVE SUMMARY

Both state and federal explicit recognition and support of career guidance program improvement and utilization are spurring substantial advances in serving the continuous career planning, development, and decision-making needs of individuals. Representatives from a very diversified array of private and public interests are actively and directly involved at all levels in career guidance and counseling program policymaking, priority setting, planning, implementation, delivery, and evaluation.

The goal of this project was to estimate effects of career guidance and counseling on intermediate outcomes measured while respondents remained in high school and on employment and educational outcomes measured after respondents left high school. Data from the 1980 sophomore and senior cohorts of the High School and Beyond (HSB) database were used in multivariate analyses.

The analyses strongly replicated findings of past research regarding the impact of status background and personal characteristics (gender, race, ethnicity) on career expectations and performance measures (tests, grades). These variables also affected college-going behavior and exhibited smaller and more erratic patterns of effects on early labor market variables (hours worked, weeks worked, unemployment, but not wage). The career expectation variables (educational and occupational expectation) and perceived ability to complete college also exhibited strong positive effects on college attendance measures and tended to have negative effects on the work variables. In contrast, general attitudes such as self-esteem and locus of control did not have strong effects on post-high school job or education outcomes.

The analyses did not attempt to answer the question regarding interdependence of college and work and the effect this dependence may have on the influence of background and lagged career expectations on college and work after high school. In all cases, total effects of background on work and college were estimated. For example, the coefficient indexing the effect of educational expectation in high school on time spent in college since high school is the sum of the direct effect plus indirect effects operating through the work variables.

In contrast to the strong and consistent effects of background and attitudes, effects of guidance program variables are rather small and exhibit some erratic patterns. Several limitations of the data must be considered, however. First, the data describing guidance describes features of the school a youth attended, not guidance activities to which each youth was exposed during high school. Second, the guidance data were collected in 1984, 2 years after the 1980 sophomore cohort (normally) finished

high school and 4 years after the senior cohort finished. Third, program features of guidance were described for each school by a single person, the head of the guidance and counseling department or comparable person.

With these limitations in mind, the analyses revealed some interesting results. First, youth who attended schools that emphasize counseling (as indicated by student exposure reported by guidance personnel) tended to have higher career goals and attend college more than other youth. Second, youth who attended schools for which the counselor respondent expressed positive attitudes about the guidance program also tended to have higher career goals and college attendance. Anomalously, youth who attended schools that emphasized occupational information had lower growth on test scores than other youth. Several interesting interactions were found, though none were large. A "strong" guidance program (as indicated by a summary index of many of the guidance program variables) increased the effect of base year occupational expectations on first follow-up educational expectations. The guidance index also decreased the influence of educational expectation on tests, tended to destabilize perceived college ability, and reduced the influence of test scores on perceived college ability. None of these results were strong, however. Thus, confidence in these results must await replication.

The pattern of effects involving the nonguidance variables probably provides more useful insight regarding guidance policy than the analyses of the effect of guidance programs, though the two types of effects must be combined to arrive at informed policy. The fact that status background, race, and gender influence career outcomes is a salient finding for guidance programs. There was limited evidence that guidance program variables do affect educational and occupational plans and perceived college ability, but the effects are much smaller than they would have to be in order to reduce the effects of background to a substantial degree.

Career guidance and counseling program quality indicators, developed from the findings of the study, were identified. Comprehensive high school career guidance programs that lead to positive measurable outcomes for students should--

- keep options open for all students, regardless of socioeconomic status, race, gender, and students' perceptions of themselves.

- focus on the educational aspirations, occupational aspirations, and perceived ability for postsecondary education of the students rather than general attitudes such as self-esteem and locus of control.

- give concern to how student employment during high school affects the chances of the student after high school.
- emphasize career planning.
- provide individual and group counseling and other interventions.
- provide opportunities to students to enhance their performance on standardized tests.
- provide a program that will enable counselors to develop favorable attitudes toward the career guidance program.
- be based on a written plan for the program.

# CHAPTER 1

# INTRODUCTION

As noted by Pritchard (1984), both state and federal explicit recognition and support of career guidance program improvement and utilization are spurring substantial advances in serving the continuous career planning, development, and decision-making needs of individuals. Representatives from a very diversified array of private and public interests are actively and directly involved at all levels in guidance program policymaking, priority setting, planning, implementation, delivery, and evaluation.

## Perkins Act Mandates for Career Guidance and Counseling Programs

Career guidance and counseling is treated as an integral and pervasive component of vocational education in the Carl D. Perkins Vocational Education Act (P.L. 98-524) (U.S. Congress 1984). Provisions for guidance in the Perkins Act are more extensive than in the previous legislation--in the new legislation, guidance is viewed as a major component in the vocational delivery system.

Part D of the Perkins Act mandates that career guidance and counseling programs be improved, expanded, and extended "to meet the career development, vocational education, and employment needs of vocational students and potential students." (P.L. 98-524, section 332, p. 2462). The Perkins Act mandates that career guidance and counseling programs shall be designed to assist individuals--

- to acquire self-assessment, career planning, career decisionmaking, and employability skills;
- to make the transition from education and training to work;
- to maintain marketability of current job skills in established occupations;

- to develop new skills to move away from declining occupational fields and enter new and emerging fields in high-technology areas and fields experiencing skill shortages;

- to develop midcareer job search skills and to clarify career goals; and

- to obtain and use information on financial assistance for postsecondary and vocational education, and job training (section 332a).

Additionally, programs of career guidance and counseling are mandated--

- to encourage the elimination of sex, age, handicapping condition, and race bias and stereotyping;

- to provide for community outreach;

- to enlist the collaboration of the family, the community, business, industry, and labor;

- to be accessible to all segments of the population, including women, minorities, the handicapped, and the economically disadvantaged (section 332b).

Twenty percent of the state guidance funds are set aside for programs to eliminate bias and stereotyping and for ensuring accessibility of the programs to special groups.

Three types of programs are authorized by the Perkins Act. The three guidance and counseling programs shall consist of--

- instructional activities and other services at all educational levels to help students with the skills described in section 332a (see above);

- services and activities designed to ensure the quality and effectiveness of programs, such as counselor education, training of support personnel, curriculum development, research and demonstration projects, and a range of other activities;

- projects which provide opportunities for counselors to obtain first-hand experience in business and industry, and projects which provide opportunities to acquaint students with business, industry, the labor market, and training opportunities (section 332b).

If one considers all students who complete at least one vocational course in high school, more than 90 percent of the secondary school population (unpublished tabulation from HSB data) could be affected by guidance programs under the Perkins Act. Existing empirical evidence suggests that youth who need help in formulating their career goals and actions often have not received comprehensive guidance assistance. For example, Ekstrom and Lee (1986) reported that they found, in a national sample, that guidance and counseling services appear to be unequally available to all public high school students. They indicated that students from families of lower socioeconomic status, of minority status, and from small schools in rural areas are less likely to have access to guidance counseling for selecting a high school curriculum or planning an appropriate course of study. They go on to state that:

> It appears that students who may need such guidance the most, since they come from home environments where knowledge of the consequences of curricular choices is limited, are least likely to receive it in their schools. (p. 2)

Ekstrom and Lee found that access to counseling for post-high school plans (both career counseling and college counseling) was more equitable. However, 44 percent of high school seniors reported they had not been influenced by a counselor in making these plans. Students in the general curriculum appeared to have been most likely to be deprived of counseling for further education or employment.

## The Need for Career Guidance and Counseling

The need for career guidance and counseling has been widely, but not consistently noted. For example, some of the educational reform reports produced by educators ignored career guidance and counseling. However, reports from various business groups have indicated a recognition of the need for such a program.

Many researchers and education reform reports have spoken to the need for career guidance. For example, Powell, Farrar, and Cohen (1985), in their study of the "shopping mall" high school, point to the need for personalization of the high school experience. They say:

> Personalization has a human and a professional dimension. The human side involves knowing students from the point of view of a concerned adult friend, while the professional side adds the element of specialized knowledge about particular strengths and weaknesses in learning. No one can know students seriously in these

> ways when the only adults charged with the task--the counselors--confront three or four hundred students and must spend most of their time on those who command special attention: the handicapped, the troubled, the top-track enclave. . . . Therapeutic skills are not what most students need from advisers. What they need are adults who know them as unique learners, complex and distinctive. (p. 318)

Boyer (1983), in reporting on secondary education in America, points out that the obvious place for students to turn for advice is the guidance office. However, at every school visited, the counselors were shockingly overloaded with little time to talk to students about career choices or even to stay informed themselves. To sum up, Boyer stated:

> Our conclusion: The American high school must develop a more adequate system of student counseling. Specifically, we recommend that guidance services be significantly expanded; that no counselor should have a caseload of more than one hundred students. Moreover, we recommend that school districts provide a referral service to community agencies for those students seeking more frequent and sustained professional assistance. (p. 131)

The National Science Board Commission on Precollege Education in Mathematics, Science, and Technology (1983) pointed out that:

> Guidance counselors play an important role in academic and career advising of students. School districts must give special consideration to the preparation and responsibilities of those persons who occupy such positions. In addition to competence in the technical areas of advising and counseling, guidance counselors should be selected and trained with appropriate emphasis on their sensitivity and understanding of the Nation's commitment to abolishing discrimination based on race, sex, ethnicity or socioeconomic conditions. (p. 41)

Although the National Commission on Excellence in Education (1983), in their report A Nation at Risk, indicated that the goal of education must be to develop the talents of all to their fullest, no mention was made of the use of career guidance and counseling to assist all students to work to the limits of their capabilities.

## Guidance for Vocational Education Students

Boyer (1983) points out that vocational students occasionally get fragments of advice about job prospects, but, more often, they are on their own. He further indicates that high school counselors seem somewhat more confident in helping students who are college bound, but very often this means discussing how to get into competitive colleges.

The National Alliance of Business (NAB) (1986) points out that, in looking to the year 2,000, the work-force will require better labor market information and improved counseling, testing, and assessment services. NAB goes on to say:

> Youth must be provided information on job opportunities as early as junior high so they can begin to explore careers. Equally as important, they need sound advice based on aptitude tests and other assessment tools concerning those job areas for which they may be best suited. . . . Lack of career knowledge among youth . . . contributes to poor work attitudes and job hopping and affects long term earnings. (p. 7)

The National Commission on Secondary Vocational Education (1984) spoke directly to the need for career guidance and counseling. The commission stated:

> Inadequate student knowledge subtly but formidably constrains student access to vocational education. Students and parents need to be accurately informed about what vocational education is, how it relates to their personal and career goals, and how it can be used to help them achieve their goals. One does not choose what one knows little about or is constrained from choosing by unexamined social attitudes.
>
> We need comprehensive career guidance programs that will provide this information and remove some of the subtle status distinctions involving vocational education. Comprehensive guidance means counseling that is available to all students, covering all subjects, leading to all occupations.
>
> We cannot achieve this goal of comprehensive guidance when counselors must deal, on the average, with 400 or more students. Nor can this goal be achieved unless counselors and teachers cooperate in new approaches to facilitate the career development of students, unless counselors expand their use of group techniques, computer-assisted guidance, comprehensive career information systems, and other methods designed to provide assistance to all students. Counselors must serve as a resource to integrate career guidance concepts and occupational information in the classroom. (p. 10)

## Research on Career Guidance and Counseling

To date, most research in the area of career guidance and counseling has been directed toward program development and improvement and relatively little effort expended on program evaluation, especially if one is concerned with evaluative findings that are comprehensive and national in scope. There have been a substantial number of evaluations of short-term, specific interventions carried out.

Meta-analyses of these short-term, specific intervention evaluations suggest that guidance activities designed to achieve specific objectives often are successful, at least in the relatively short-term (e.g., 6 weeks) covered by extant evaluation studies (Spokane and Oliver 1983). A recent study that examined the relatively long-term (2 years) effects of guidance indicates that students attending schools with "active" career guidance programs do not express a stronger sense of self-efficacy, do not indicate higher self-esteem, and do not exhibit more "realistic" career plans than do students attending schools with "inactive" guidance programs (Hotchkiss and Dorsten 1985).

The study by Hotchkiss and Dorsten is important because it relies on a national data set with good sample properties and is addressed to identifying relatively long-term effects of guidance programs (rather than short-term specific interventions). It is, however, limited. The number of potential outcomes of guidance and counseling certainly extends beyond those studied (self-efficacy, self-esteem, realism of career plans). Perhaps the most critical expansion of these outcomes entails examination of experience in the labor market after leaving high school, such as employment, wages, job satisfaction, and other variables. (From this vantage point, the outcomes studies by Hotchkiss and Dorsten probably should be labeled intermediate-term rather than long-term.) In addition, a number of in-school variables such as grades, test scores, and deportment may be influenced by guidance programs. The conceptual framework proposed by Hotchkiss and Dorsten is limited in scope: (1) it does not incorporate the full range of potential guidance outcomes, and (2) it does not present a careful classification of guidance program interventions.

The study being reported here addresses these informational gaps by conducting a comprehensive assessment of the effects of various career guidance/counseling programs at the national level. The data used were drawn from the High School and Beyond (HSB) national database.

Chapter 2 of this report provides a review of related literature. Chapter 3 details the methodology used in the study. Chapter 4 provides the results of the study. Chapter 5 reviews efforts to establish standards for guidance programs and provides suggested career guidance program "quality indicators" for use by policymakers who are interested in developing program standards for career guidance and counseling programs.

# CHAPTER 2

# RELATED LITERATURE

Career guidance and counseling has been provided in secondary schools since the early 1900s (Hendrickson 1983). By the late 1970s, there were approximately 40,000 secondary school counselors (Shertzer and Stone 1981).

Trends in student career development from 1973 to 1983, documented by Prediger and Sawyer (1986), show a 32 percent increase in the proportion of 11th graders who reported receiving "some" or "a lot" of career planning help from their schools. The proportion of students involved in typical career exploration activities increased significantly over the 10 years of the study. In general, Prediger and Sawyer report that 10-year trends indicate that schools are having a greater impact on 11th- and 12th-grade student career development than they were in 1973.

## Guidance Goals, Objectives, and Methods

Evaluating the impact of career guidance is not a simple task because the goals are diffuse, goals fade into objectives, and objectives may be viewed as part of the methodology for achieving other objectives or goals ("enabling objectives"). Shertzer (1982) states: "The most frequently expressed goal of guidance in the nation's schools is the advancement of students' personal development (p. 16)." The primary strategy in achieving this diffuse result is expressed by Shertzer in the following terms: "In that setting (schools), guidance seeks to help students marshall intelligence about themselves and the environment, understand their experiences; and engage in planful behavior to achieve their maximum potentialities (p. 16)." This statement also lacks the specificity needed to provide a clear guide in assessing the outcomes of guidance. Shertzer supplements it with a lengthy list of relatively specific outcomes such as use of information, improved grades, increased satisfaction with school, decreased discipline problems in school, reduced school dropout rates, reduced "antisocial behavior, increased participation in extracurricular activities, and increased consistency between career goals and abilities. Recent reviews of empirical assessments of guidance outcomes (Spokane and Oliver 1983; Campbell et al. 1983; Herr 1982; Oliver 1978) also reveal a bewildering variety of outcomes. Herr (1982), for example uses the following categories to classify the outcomes: school achievement; self-concept, self-esteem, and mental health; career development, planning, education, and choice; transition to work and work adjustment; and delinquency.

With so many potential outcomes of guidance, how can it be evaluated? If guidance is shown to have a positive effect on, say, occupational information but not on grades or test scores, is it effective or not? Clearly, it is desirable to identify central aspects of the philosophy of guidance and counseling to use as a starting point in assessing whether guidance and counseling achieves its purposes. Without doubt the focal idea in career guidance is that individuals must be taught information about careers, must achieve self-understanding, and must connect knowledge of careers and self through a process of "true reasoning."

Parsons (1909) first espoused this philosophy, and it has been echoed in numerous sources since. A book entitled Matching Youth and Jobs (Bell 1940) embodies the same rationalistic view that profiles of persons and jobs should be coordinated to produce the best possible fit. The philosophy expressed in these old publications generally is viewed as antiquated by contemporary professionals in vocational guidance.

The contemporary view is that picking a career and adjustment to economic life are reflected in a developmental process that engages the broad self conception of each individual (Super 1957; 1963; 1972; 1974). But even Super, who is best known for his emphasis on self-concept and the dynamics of vocational life, emphasizes the importance of individuals engaging in a dynamic process of self assessment, information gathering, and matching their self concepts to their careers. For example, as early as 1953 Super wrote:

> Work satisfactions and life satisfactions depend upon the extent to which the individual finds adequate outlets for his abilities, interests, personality traits, and values; they depend upon his establishment in a type of work, a work situation, and a way of life in which he can play the kind of role which his growth and exploratory experiences have led him to consider congenial and appropriate (p. 190).

Most other contemporary theories of career choice and adjustment express the basic idea of correspondence between individual characteristics and occupations or jobs. Holland's personality theory is, perhaps, most explicit (Holland 1973). Lofquist and Dawis (1969) proposed that worker satisfaction and productivity depend on the matchup between individual needs and the job environment. Other major theoretical statements on career choice also contain this central point (e.g., Dudley and Tiedeman 1977; Ginzberg et al. 1951). These basic theoretical conceptions heavily influence at least the goals of guidance practice, as illustrated by the excerpt on guidance strategies from Shertzer (1982) quoted above.

Two central ideas are implicit in the view that the main function of career guidance is to assist persons in vocational choice and adjustment by improving self-understanding and knowledge of the world of work. One is that individuals must assume responsibility for their own lives--adopt a sense of agency regarding their careers. The second is that individuals will develop realistic self-concepts and realistic career plans, based on information and well-thought-out reasoning. These two ideas are strongly imbedded in the guidance literature. Regarding a sense of agency, Herr (1982), for example, has written:

> Implicit in such value positions (importance of informed choice) has been the intent of guidance and counseling to help persons become more purposeful and active in the management of the educational, occupational, and personal/social options available to them. . . . Such value positions stand in opposition to passivity or nonassertiveness in behalf of one's rights or one's aspirations, to idleness or to behavior that is not consciously goal directed (p. 156).

Herr is similarly explicit about the importance of intelligent choice:

> From the beginnings of this nation in the last century, guidance and counseling have had a continuing commitment to individual rights, to the facilitation of free and informed choice, and to helping persons develop intelligence about their personal characteristics and the opportunities available to them (p. 156).

In reviewing the works of Super, Ginzberg, Tiedeman, and other vocational development theorists, Osipow (1983) sums up as follows: "Finally, all these writers seem to assume that the ability and motivation to evaluate oneself realistically can be enhanced through education and counseling (p. 208)."

## Evaluating the Outcomes of Career Guidance and Counseling

Oliver (1979) points out that issues in career counseling research are not new and unique; that, in fact, as early as 1941 many of the problems facing today's researchers were identified by Williamson and Bordin. From her review of career counseling outcome measures covering the period 1950-1976 (Oliver 1978), Oliver (1979) made the following recommendations for research on the outcomes of career counseling. She recommended using multiple criteria, using specific as well as global measures, emphasizing short-term measures (although pointing out that large-scale longitudinal studies require repeated measures over a lengthy period of time); and defining constructs carefully.

In his monograph on evaluating the effectiveness of career interventions, Fretz (1981) points out that little progress can be made to improve the effectiveness of career interventions until more specific and systematic evaluative attention is given to three points: the nature of the interventions studied (treatment parameters); the relationships of participant attributes to the effects of treatments; and the relationships of both treatment parameters and participants' attributes to the diversity of career-related behaviors and learning that are currently used as outcome measures for evaluating career interventions.

## Assessment of Outcomes

To date, assessment of the outcomes of guidance and counseling from empirical research has relied primarily on examining (1) career planning, exploration, or information-seeking, most often determined by student self-reported actions taken after exposure to treatment; (2) decisionmaking or career maturity, assessed by various instruments such as the Career Maturity Inventory (CMI) and the Career Development Inventory (CDI); and (3) a residual category containing various outcomes, such as self-knowledge and appraisal, scholastic achievement, and school attendance. Although many interventions seem to provide at least some beneficial effects (Spokane and Oliver 1983), a variety of interventions often appear to generate similar outcomes, thus suggesting the possibility of Hawthorne effects occurring in some studies. On the other hand, Spokane and Oliver note that frequently it is found that a given treatment has the expected effects on some outcomes but not on others.

Career exploration or information-seeking outcomes. Conclusions from studies examining career exploration or information-seeking outcomes for high school students are difficult to compare primarily because some studies address the issue of treatment by attribute interactions whereas others do not. For example, some studies conclude that there are no consistent differences between experimental and control groups regarding increased information-seeking (Thoresen, Hosford, and Krumboltz 1970; Davis and Sanborn 1973; Thoreson and Hamilton 1972; Zytowski 1977). Some of these studies report interactions between certain subgroups within the experimental group, such as treatment by sex (Krumboltz and Thoresen 1964); treatment by SES of school attended (Thoreson, Hosford, and Krumboltz 1970); and treatment by counselor/school (Krumboltz and Thoresen 1964). Other interactions include treatment by motivation (Borman 1972); treatment by counselor/school differences and type of setting--group or individual (Krumboltz and Thoresen 1964), along with treatment by sex, counselor/school, and setting (Krumboltz and Thoresen 1964). Davis and Sanborn (1973) found main effects of treatment as well as a sex-by-grade level interaction.

Thoresen and Hamilton (1972) found that both peer modeling and modeling plus usage of career materials increased career knowledge, but materials without modeling did not result in significant differences (Thoresen and Hamilton 1972). On career knowledge and use of information, both treatments and their combination were significant. Borman (1972) found no variance between types of treatment (individual, counseling-reinforcement, individual exposure to a guidance tape, and control); however, more motivated students responded to the guidance tape whereas those less motivated responded better to individual counseling. One study utilizing the Vocational Exploration Group (VEG) with ninth-grade Mexican-American students reported only significant differences for knowledge of job functions (Bergland and Lundquist 1975). In summary, treatment per se does not seem unequivocally to produce increased career information seeking as a short-term goal. On the other hand, specific treatments may benefit certain subpopulations of students, for example, effects may differ by sex, grade level, motivation level, and exposure to reinforcing school- or counselor-specific factors.

Career maturity outcomes. A second area of empirical research treats career maturity (attitudes and knowledge about the work world) and decisionmaking skills as outcomes. No significant differences emerged from Swails and Herr's (1976) study of vocational maturity and decisionmaking from any of the three treatments (group counseling, counseling using a peer model, and the use of a career game). Swails and Herr suggest that these findings indicate the complex nature of both the vocational development process and the career maturity construct. Carey and Weber's (1979) analysis found that participation in an experience-based career program did not increase work attitude maturity. Zytowski's (1977) study measuring certainty of and satisfaction with occupational choice as a result of exposure to and exploration of students' career interest profiles showed no significant differences between experimental and control groups; only self-knowledge increased.

On the other hand, Brenner and Gazda-Grace (1979) did report that after participation in a decision-making course that emphasized self-knowledge, occupational information acquisition, and career planning, the experimental group showed significantly higher gain scores in decisionmaking ability than did the control group. The experimental group was composed of females, whereas the control group included both genders. Yates, Johnson, and Johnson (1979) found significant gain scores for knowledge and job choices (but not for planning or problem solving) as a result of participation in the Vocational Exploration Program (VEP). Neither of the latter two studies examined possible interaction effects such as treatment by sex, however.

Indeed, interaction does play an important part, not only in studies of information seeking, but also in studies of career maturity when the research design takes such a possibility into account. Hanson and Sander (1973) examined the realism of students' choices of vocational plans and found that "overshooters" (those with highly unrealistic vocational plans compared to their achievement, interest and aptitude, and background) did become more realistic in their vocational plans with group counseling, whereas "undershooters" benefitted more from individual counseling. Flake, Roach, and Stenning (1975) reported that interactive effects occurred over time for both a self-appraisal score and a total score for career maturity; the experimental group increased both scores between pre- and post-test, whereas the scores of the control group declined. Career attitude gain scores for the experimental group also reached significance.

Other outcomes. The third set of studies addressed a group of heterogeneous outcomes, including self-knowledge, school attendance, and achievement. Yates, Johnson, and Johnson (1979) reported self-knowledge gain scores increased as a result of participation in the Vocational Exploration Group (VEG) program to stimulate work attitudes and competencies, and Zytowski (1977) concluded that accuracy of self-information increased due to access to information and interpretation of occupational profiles, but only for interested students.

For attendance and academic performance outcomes, Carey and Weber (1979) did not find significant differences between students participating in an experience-based career education program and those in the regular curriculum; only the English language skills (mechanics of language and expression) differed between the two groups in favor of the controls. In a review of the effects of guidance and counseling processes on school achievement, Herr (1982) concluded that high school students benefitted by guidance and counseling in four areas: (1) determining more realistic choices of course work and academic achievement, (2) using counseling to improve scholastic performance for those who had adequate ability and chose to participate, (3) reducing class-cutting and disruptive classroom behaviors and raising grade point averages for lower SES students, and (4) increasing overall levels of student achievement in schools where staff, administration, parents, and guidance personnel collaborated in dealing with students experiencing personal problems. Common themes evident in the studies of high school students reviewed by Herr are the importance of guidance and counseling for (1) those who are underachievers, socioeconomically disadvantaged, experiencing personal or social stress, or holding less-realistic academic goals, but (2) those with adequate ability and motivation.

### School-Level Guidance Program Outcomes

A few studies have examined the effects of school-level guidance programs. For example, Trebilco (1984) analyzed career maturity and career curriculum practices and policies in 38 Australian metropolitan secondary schools. Using both student data (job attitudes and certainty, locus of control, and decision making) and data from principals, career teachers, and subject-matter teachers, Trebilco compared schools on the basis of their career education practices. His major conclusions were as follows: (1) schools with career programs that emphasized student self-awareness had students with higher career maturity in the 11th grade than schools that did not, and (2) higher career maturity was evident in students in schools with characteristics such as administrative and staff support, availability of career resource materials, and satisfaction of the career teacher. Nevertheless, no single school or student factor explained higher career maturity; rather, schools that had such structural and program characteristics in place and that emphasized student self-awareness reported high levels of career maturity in students. Presumably, career maturity resulted from exposure to school structure and program design for students whose self-awareness was congruent with such exposure; a longitudinal design would strengthen these conclusions.

Myers et al. (1975) paired 24 high schools on student background characteristics, location, dropout rate, and size of counseling service. Using random assignment, one of each pair of schools was designated as experimental and the other as control. Tenth graders in the experimental schools used a computer-based educational and occupational exploration program. Myers et al. reported (1) significant gains in "planfulness" and knowledge/use of resources for occupational exploration for the experimental group, and (2) significant gains in knowledge and use of resources, as well as information and decisionmaking skills for females. Computer use time may have confounded these conclusions, however. Planfulness and knowledge/use of resources increased with increased computer use time, and gains were larger with higher use times than with lower (e.g., 5-7 hours vs. 2-4 hours). Another study (Maola and Kane 1976) reported that the computer group learned more about occupational information than the counseled group, which learned more than the control group.

## Reviews of Outcomes

Several reviews summarize the empirical work on career guidance outcomes (Spokane and Oliver 1983; Campbell et al. 1983; Herr 1982). Spokane and Oliver provide the most comprehensive review because they compute effect sizes in their meta-analyses of available research.

Three difficulties with the Spokane and Oliver study may be identified. First, Spokane and Oliver utilized studies of a variety of client populations; the present study examines high school students only. Second, of the 18 studies with high school students as subjects that are cited by Spokane and Oliver, 9 included group/class interventions; 8 were individual interventions, and 4 were alternative interventions, e.g., computers (3 studies used 2 types of settings). Therefore, over one-half (12 of 21) of the interventions for these studies fell into categories for which Spokane and Oliver indicated that their conclusions were less certain, due to the availability of fewer studies and considerable variation in the size of effects. Finally, Spokane and Oliver aggregate effects that are not statistically significant in the same manner in which they handle those that are significant. Thus, for example, one study (Bergland and Lundquist 1975) reported that one out of eight differences between experimental and control groups was statistically significant, but Spokane and Oliver treat all eight differences in the same way.

## Summary

The research on the effects of guidance and counseling on high school students provides conflicting evidence about whether those receiving treatments accrue more benefits than those not receiving treatment. It may be that these studies indicate what guidance and counseling could do rather than what it has done to affect student behavior (Herr 1982). The research seems to be confounded by complex interactions between sex, SES, school and guidance program characteristics (e.g., staff and administrative support, career resource availability), and type of treatment (group or individual). Few studies provide for such complexities in their design; those that do so hint at spurious effects other studies may not have addressed. The most consistent effects of career counseling interventions for high school students seem to be increasing career information knowledge and planfulness, providing students with more congruent and appropriate occupational choices, and increasing self-awareness. These effects are potentially important when placed within context, for example, as a first-stage outcome in which awareness can lead to interest in seeking information or better decision making for specific student subpopulations. Also, guidance and counseling probably does not lead to dysfunctional outcomes, that is, the target behavior does not deteriorate as some psychotherapy studies have noted (Herr 1982).

Nevertheless, the results of these intervention studies must be interpreted cautiously and not generalized to all high school populations. There are three primary reasons for caution. First, students serving as subjects in interventions are often volunteers or students interested in career guidance. Researchers who did include nonvolunteers often lost a substantial proportion of subjects due to unavailability (Zytowski 1977), or found treatment-by-motivation interactions (Hanson and Sander 1973; Borman 1972). Second, many nonrandom assignment studies reviewed here did not adjust for pretreatment differences between experimental and control groups on the dependent variable, nor did they include extensive controls for status characteristics of respondents (e.g., Carey and Weber 1979; Borman 1972; Zytowski 1977). Third, most intervention studies examine specific treatments within one school, providing limited information about the effectiveness of guidance approaches or the effectiveness of guidance compared to other interventions such as experiential education.

In addition, the effect of career guidance programs on student outcomes in one school may be difficult to generalize to other schools. For example, Trebilco's study indicated that factors such as administrative and staff support for guidance, counselor satisfaction, and resource availability should be included as important variables creating interaction effects. Also, a "reactive" or intervention study in a school examining a particular group of students cannot provide a valid assessment of an entire school guidance program. Moreover, the long-term outcomes experienced by those exposed to counseling and guidance in high school versus those not exposed, for instance, by higher income, better academic records, and college and employment success (Herr 1982), may not accrue to those involved in short-term studies.

Finally, Spokane and Oliver (1983) emphasize that subjects receiving conventional treatment do not constitute control but merely comparison groups. It is concluded that the impact of career guidance programs requires further in-depth examination before firm conclusions regarding the effectiveness of career guidance are justified.

To recapitulate briefly, most assessments of career guidance outcomes consist of highly focused interventions, use the experimental design as a model, and rely on specialized samples. Because students are likely to be aware that they are receiving special attention in these setting, the interventions may be "reactive." The treatment activities and the outcome measures are closely coordinated. Student scores on the outcome measures are measured shortly after completion of the treatment. As Spokane and Oliver state (1983), this type of intervention tends to produce the outcomes it was intended to produce. But careful reading of the original studies shows many complex statistical interactions and reveals that Spokane and Oliver treat results that are not statistically significant as equivalent to those that are.

Although the study reported in the following chapters is related to the studies discussed above, it differs in three important respects. First, the purpose of this study is to assess the impacts of an entire guidance program in a school rather than one (or a few) specific intervention. Second, the study draws on a broader spectrum of social science theory, research, and commentary than the typical evaluation study. Third, the data used in the study were taken from a large multipurpose survey (High School and Beyond, HSB). Consequently, the results are more nearly generalizable than are those of most other studies of guidance, and the outcome measures are not so closely tailored to the "treatments" as has been true in past research.

## CHAPTER 3

## METHODOLOGY

The approach taken in this study is described first. Following the approach are sections on design, data used, and data analysis.

### Approach

The purpose of this study was to conduct a comprehensive assessment of the effects of various career guidance/counseling programs at the national level. The data used were drawn from the High School and Beyond (HSB) survey.

Supplemental HSB data, collected in connection with the Consortium for the Study of Schooling Effectiveness, were used to obtain measures of career guidance program characteristics. These data are by far the richest available source of information of their type on a national sample. The outcomes of career guidance encompass both in-school variables and post-high school labor market and educational experience. The basic strategy was to determine whether schools with strong career guidance programs produce students who experience improved in-school and post-high school outcomes. An important step in making these determinations was to develop a conceptual model that organizes the variables and their interrelationships into a coherent framework.

#### Framework

As a starting point it was useful to classify the many variables related to career guidance and counseling into several categories. An initial classification is displayed in figure 1. The expected relationships among these broad groups of variables is given in schematic form in figure 2.

Some fundamental ideas are contained in figure 2. First, guidance programs operate in a complex environment. Many factors other than guidance may influence the outcomes that guidance interventions are designed to shape; consequently, a large number of controls must be used. These include demographic variables and SES, base-year performance and attitudes and part-time work during high school. Potential effects of background and base-year measures on the dependent variables are well known (Rock, et al. 1986). Effects of part-time work on post-high school labor market experience are not as widely known, but have been found

- Demographic/Background
  - SES
  - Race
  - Ethnicity
  - Gender

- In-School Performance and Attitudes (time 1 and time 2)
  - Self-esteem
  - Locus of control
  - Work orientation
  - Test scores
  - Grades
  - Homework
  - Educational plans
  - Occupational plans
  - "Realism" of career plans
  - Dropout

- Guidance Program Characteristics
  - Student use/exposure
  - Goals
  - Planning process
  - Computer usage
  - Student/counselor ratio

- Part-Time Work During High School (time 1 and time 2)
  - Hours/week
  - Wage
  - Weeks/year

- Post-High School Employment
  - Hours/week
  - Wage
  - Unemployment
  - Months/year
  - OJT
  - Training-related placement

- Postsecondary Education
  - Attendance
  - 2-year/4-year
  - Vocational school
  - Extent

Figure 1. Classification of variables

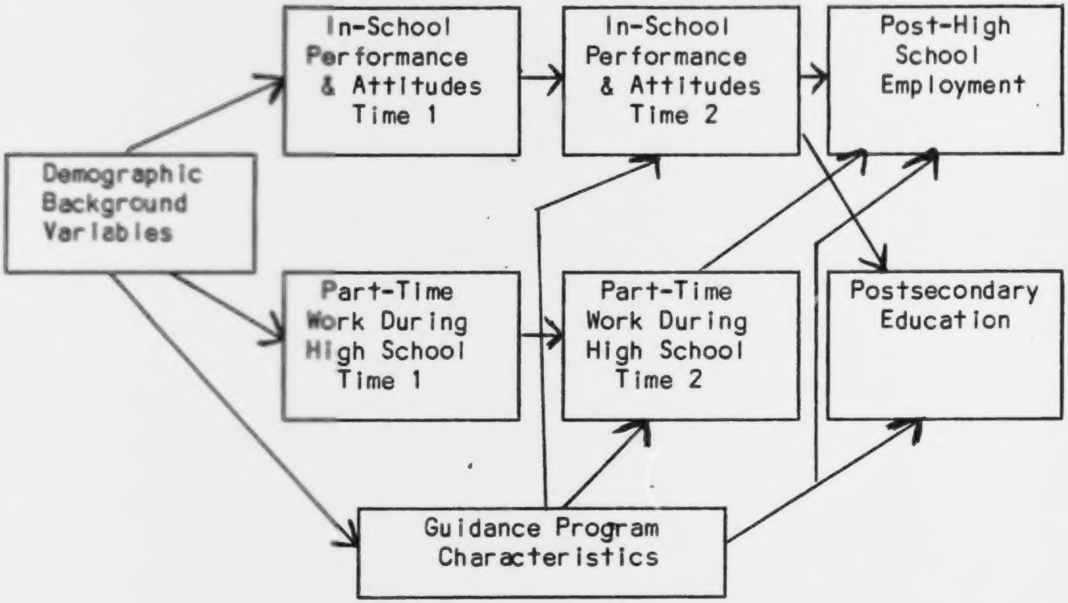

In-School Performance & Attitudes Time 1
In-School Performance & Attitudes Time 2
Post-High School Employment
Demographic Background Variables
Part-Time Work During High School Time 1
Part-Time Work During High School Time 2
Postsecondary Education
Guidance Program Characteristics

Figure 2. Effects of guidance programs

consistently in recent work (Meyer and Wise 1980; Stephenson 1981; Kang and Bishop 1984; and Mortimer and Finch 1986).

Second, the impact of guidance on post-high school outcomes may be direct or operate indirectly via its impact on time 2 school outcomes.

The concept of "realism" of career plans is difficult to define. In the vocational psychological literature it typically is defined directly by a battery of items on a questionnaire. No such measures are available in national surveys such as the HSB, however. Assessment of realism may proceed, nonetheless, by testing specified interactions in the statistical analyses. These interactions arise from the following logic. Those with realistic career plans will exhibit a closer dependence of educational plans on achievement, ceteris paribus. They also will align their educational plans and occupational plans more closely than youth with unrealistic outlooks. Similarly, enrollment in college will depend more on ability for those with realistic orientation than for others. It is, of course, recognized that this type of specification of realism is incomplete. Individuals faced with the complex set of alternatives in the real world likely are able to assess what is and is not realistic for themselves in ways not captured by survey data. There are two important contributions of specifying realism as a statistical interaction, however. First, the interaction specification comprises a formalization of an idea that hitherto had remained informal. The formalization promotes development of precisely stated theory with clear implications for observed relationships. The second contribution follows directly from the first. With the interaction specification it is possible to conduct tests of hypotheses about realism using large national data sets with standard survey items and achievement tests. As with any statistical analysis of survey data, it is critical to recognize that the hypotheses are in effect, about averages. We expect substantial variation around those averages by individuals.

It is inferred from the above line of reasoning that, if career guidance programs produce a realistic attitude toward careers, students attending schools with strong guidance programs will exhibit stronger dependencies between indicators of capacity and the type of career options planned and pursued. Thus, a statistical interaction of the following form is implied:

$$y = a + b_1x + b_2g + b_3xg + u$$

where

$y$ = outcome, such as college attendance
$x$ = indicator of ability to complete college, such as test score or perceived ability to complete college
$g$ = guidance program characteristic, such as level of exposure to group or individual counseling, classroom guidance unit, and computer applications

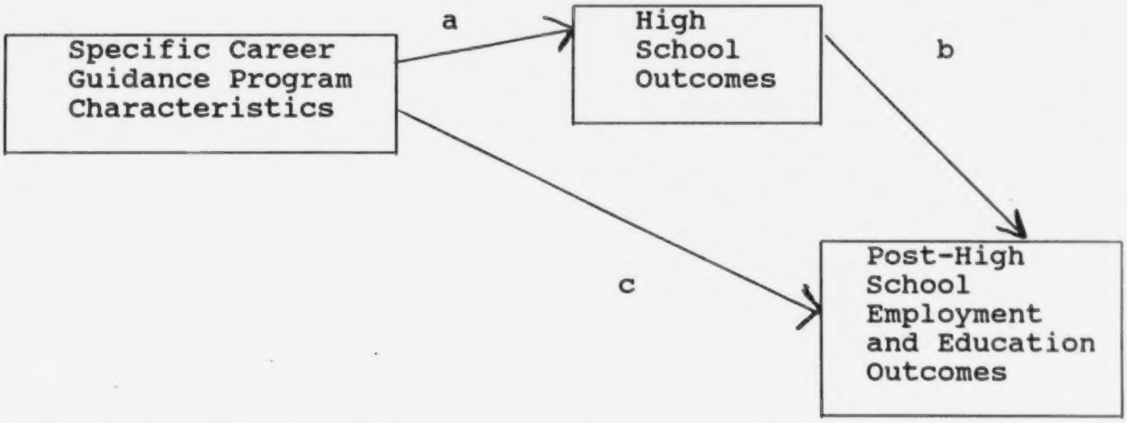
$u$ = disturbance
$a, b_j$ = constants

This model has been given preliminary test by Hotchkiss and Dorsten (1985), but a number of extensions are in order. These include application to post-high school outcomes and more refined measurement of guidance program characteristics.

Recent findings reported by Campbell et. al. (1986), indicate that labor market advantages of vocational students depend heavily on whether placement after leaving high school is or is not in a job related to one's vocational training. Those in training-related jobs reap financial benefits from their training. Those in other jobs do not. Consequently, one of the key post-high school variables in this study is whether vocational students found training-related jobs.

## Study Design

The focal goal of this project was to estimate effects of career guidance and counseling on intermediate outcomes measured while respondents remained in high school and on employment and educational outcomes measured after respondents left high school. Abstracting from figure 2, attention was centered on the following relationships:


a
b
c
Specific Career Guidance Program Characteristics
High School Outcomes
Post-High School Employment and Education Outcomes

As indicated in figure 1, each of these effects (a, b, c) was estimated under controls for a large number of potentially confounding factors. In this study we do not differentiate between direct and indirect effects of guidance programs on post-high school outcomes. Rather, we estimate the total effects (c + ab).

Measurement of the guidance program characteristics was based on the Supplement Survey of the HSB. The number of variables in that data which could have been used to characterize guidance programs exceeds the number that can be analyzed sensibly. Similarly, the main HSB survey contains a large number of variables describing potential outcomes of guidance. The list of possible variables is so large that it necessarily had to be pruned. Table 1 lists all the variables for which effects are reported in this report. The sample size of data present, mean, standard deviation, and variable definition also are given in the table.

It is important to recognize that the data describing career guidance programs characterize the schools that student respondents attended, not the exposure of each student to specific programs or counselors. In one way, lack of information on exposure of individual students is a weakness of the data, but, if properly interpreted, these data can be used to address questions that have not been investigated in the numerous small-scale evaluations cited in the review of the literature. This study investigated whether students who attended schools with specified guidance program characteristics systematically differed with respect to the high school outcomes and the post-high school outcomes. An important benefit of this type of analysis is that it may be used to capture the "total" effects of guidance programs (Firebaugh 1978). Thus, for example, a youth may have picked up information regarding local employment opportunities, characteristics of postsecondary schools, or attitudes that improve his or her career options by talking to peers, teachers, or other school staff. If the youth attends a school in which many students and staff are knowledgeable about careers and hold attitudes that help with career development, he or she is likely to obtain information and adopt attitudes favorable to enhancing employability, even without direct exposure to specific programs. This study assesses this type of indirect effect of "school ethos" in addition to the direct effects of student exposure to specific guidance programs and experiences.

## Data

The data used in this paper are part of the High School and Beyond database. The High School and Beyond (HSB) survey was sponsored by the National Center for Education Statistics, and the data collection was carried out by National Opinion Research Center (NORC). The HSB is a major longitudinal survey of high school youth. Base-year data were collected in 1980, the first follow-up was completed in 1982, and the second follow-up was conducted in 1984. Plans call for additional follow-ups at 2-year intervals. The base-year survey contains data describing over 58,000 student respondents, split between students who were sophomores (N = 30,030) in 1980 and those who were seniors (N = 28,240).

Students in the sample completed questionnaires at each wave of data collection. The base-year questionnaires requested information about respondents' background, personal character-

## TABLE 1

## VARIABLE NAMES, DEFINITIONS, Ns, MEANS, AND STANDARD DEVIATIONS

| Name | Definition | n | mean | std |
|---|---|---|---|---|
| | Sophomore Cohort | | | |
| SESNIN1M | SES index--average of 8 parental status variables: Father's occupation, father's education, mother's occupation, mother's education, number of family possessions from a list, home ownership, number of rooms in the home, and number of siblings (reflected) | 10466 | 0.029 | 0.594 |
| LFMIMIS1 | Missing data dummy for LFMINC1M | 10466 | 0.123 | 0.329 |
| LFMINC1M | Log of family income--in 1000s | 10466 | 2.891 | 0.544 |
| BLACKCMP | Member of black race? 1=yes, 0=no | 10457 | 0.151 | 0.358 |
| HISPNCMP | Hispanic ethnicity? 1=yes, 0=no | 10337 | 0.143 | 0.350 |
| ASIAN | Asian? 1=yes, 0=no | 10466 | 0.019 | 0.136 |
| OTHERNW | Other nonwhite? 1=yes, 0=no | 10466 | 0.801 | 0.399 |
| SEXCMP2 | Gender--1=female, 0=male | 10466 | 1.505 | 0.500 |
| FATHER1 | Father in household? 1=yes, 0=no | 10429 | 0.762 | 0.426 |
| OTMGRD1 | Other male guardian in household? 1=yes, 0=no | 10428 | 0.089 | 0.284 |
| MOTHER1 | Mother in household? 1=yes, 0=no | 10429 | 0.917 | 0.276 |
| OTFGRD1 | Other female guardian in household? 1=yes, 0=no | 10429 | 0.038 | 0.192 |
| MHOMAKR1 | Mother a full time homemaker? 1=yes, 0=no | 10466 | 0.119 | 0.324 |
| AVGRAD1 | Self report grade point ave--4 point scale | 10374 | 2.723 | 0.782 |
| HOMWRK1 | Self report hrs/week spent on homework | 10347 | 4.158 | 3.368 |
| HRSWRK1 | Hours worked per week in current/most recent job | 8761 | 13.780 | 11.945 |
| WAGE1 | Hourly wage on current/most recent job | 8781 | 2.564 | 1.137 |
| OCCASP1 | Level of occupational expectation--Duncan SEI | 8845 | 51.508 | 22.217 |
| EDASP1 | Level of educational expectation--approx yrs | 7764 | 15.132 | 2.620 |
| COLABL1 | Perceived ability to complete college--5 point scale from definitely yes to definitely no | 9893 | 4.000 | 1.026 |
| NVRWRK1 | Never worked dummy--1=never worked, 0=worked | 10466 | 0.124 | 0.329 |
| ANNHRS1 | Approximate annual hours worked | 8708 | 422.677 | 482.207 |
| CONCPT1 | Self-esteem scale--6 Rosenberg items | 10078 | 3.793 | 0.594 |
| LOCUS1 | Locus of control--6 Rotter items (high=internal) | 10057 | 3.542 | 0.561 |
| SMDEPRT1 | Deportment scale--average of standardized on following variables: days absent from school but not sick, days tardy to school, discipline problems in school, suspended from school, in trouble with the law, and cut classes sometimes | 10457 | -0.383 | 3.531 |
| OCCAMDD1 | Missing data for OCCASP1M | 10466 | 0.155 | 0.362 |
| MATHSD21 | Math test score | 9728 | 50.378 | 9.409 |
| MATHMDD1 | Missing data dummy for math test | 10466 | 0.071 | 0.256 |
| VERBAL1 | Verbal test score | 9791 | 50.429 | 9.041 |
| VERBMDD1 | Missing data for verbal test | 10466 | 0.064 | 0.246 |

Table 1-continued

| | | | | |
|---|---|---|---|---|
| AVGRAD2 | Self report grade point ave--4 point scale | 9590 | 2.850 | 0.715 |
| COLABL2 | Perceived ability to complete college--measured on a 5 point scale ranging from definitely yes to definitely no | 8815 | 4.305 | 0.918 |
| CONCPT2 | Self-esteem scale--6 Rosenberg items | 9777 | 3.964 | 0.583 |
| LOCUS2 | Locus of control scale--6 Rotter items (high =internal) | 9755 | 3.688 | 0.583 |
| SMDEPRT2 | Deportment scale--average of standardized on following variables: days absent from school but not sick, days tardy to school, discipline problems in school, suspended from school, in trouble with the law, and cut classes sometimes | 10397 | 0.227 | 4.276 |
| OCCASP2 | Level of occupational expectation--Duncan SEI | 9558 | 51.118 | 22.503 |
| EDASP2 | Level of educational expectation--approx yrs | 9547 | 14.966 | 2.515 |
| MATHSD22 | Math test score | 9678 | 51.982 | 10.356 |
| VERBAL2 | Verbal test score | 9859 | 53.566 | 9.564 |
| CTRNREJ3 | Current job related to high school vocational training? 1=yes, 0=no | 2516 | 0.070 | 0.254 |
| CHOURSJ3 | Hours worked per week on current/most recent job | 4802 | 32.918 | 14.733 |
| JSATJOB3 | Job satisfaction--single item with reference to "job as a whole" | 4671 | 3.013 | 0.720 |
| JSATINDX | Job satification index--average of 11 items wth reference to specific aspects of the job | 4868 | 2.903 | 0.553 |
| WEEKS3 | Weeks worked in 21 month period since high school | 5198 | 49.582 | 31.800 |
| MUNEMPL3 | Months unemployed since high school | 5529 | 1.988 | 4.079 |
| EDASP3 | Level of educational expectation--approx yrs | 5569 | 14.789 | 2.372 |
| OCCASP3 | Level of occupartional expectation--Duncan SEI | 5138 | 52.096 | 21.636 |
| COLTIM3 | Total time enrolled in college since high school, in yrs | 5526 | 0.728 | 0.653 |
| ENRLCOL3 | Enrolled in college at 2nd follow-up? 1=yes, 0=no | 5595 | 0.450 | 0.498 |

Senior Cohort

| | | | | |
|---|---|---|---|---|
| SESNIN1M | SES index--average of 8 parental status variables: Father's occupation, father's education, mother's occupation, mother's education, number of family possessions from a list, home ownership, number of rooms in the home, and number of siblings (reflected) | 4402 | -0.038 | 0.611 |
| LFMINC1M | Log of family income--in 1000s | 4402 | 2.867 | 0.585 |
| LFMIMIS1 | Missing data dummy for LFMINC1M | 4402 | 0.086 | 0.281 |
| BLACKCMP | Member of black race? 1=yes, 0=no | 4402 | 0.234 | 0.423 |
| HISPNIC1 | Hispanic? 1=yes, 0=no | 4402 | 0.200 | 0.400 |
| ASIAN | Asian? 1=yes, 0=no | 4402 | 0.027 | 0.162 |
| OTHERNW | Other nonwhite? 1=yes, 0=no | 4402 | 0.019 | 0.137 |
| SEXCMP2 | Gender--1=female, 0=male | 4402 | 0.544 | 0.498 |
| FATHER1 | Father in household? 1=yes, 0=no | 4384 | 0.722 | 0.448 |

Table 1-continued

| | | | | |
|---|---|---|---|---|
| OTMGRD1 | Other male guardian in household? 1=yes, 0=no | 4384 | 0.074 | 0.262 |
| MOTHER1 | Mother in household? 1=yes, 0=no | 4384 | 0.899 | 0.302 |
| OTFGRD1 | Other female guardian in household? 1=yes, 0=no | 4384 | 0.040 | 0.196 |
| MHOMAKR1 | Mother a full time homemaker? 1=yes, 0=no | 4402 | 0.129 | 0.336 |
| CONCPT1 | Self-esteem scale--6 Rosenberg items | 4286 | 3.958 | 0.598 |
| LOCUS1 | Locus of control--6 Rotter items (high=internal) | 4286 | 3.680 | 0.584 |
| EDASP1 | Level of educational expectation--approx yrs | 3486 | 15.445 | 2.415 |
| OCCASP1M | Level of occupational expectation--Duncan SEI | 4402 | 53.904 | 20.456 |
| OCCAMDD1 | Missing data for OCCASP1M | 4402 | 0.091 | 0.288 |
| COLABL1 | Perceived ability to complete college--5 point scale from definitely yes to definitely no | 4254 | 4.274 | 0.913 |
| HOMWRK1 | Self report hrs/week spent on homework | 4375 | 3.914 | 3.293 |
| AVGRAD1 | Self report grade point ave--4 point scale | 4371 | 2.879 | 0.701 |
| VERBAL1M | Verbal test score | 4402 | 50.312 | 8.629 |
| MATHSD1M | Math test score | 4402 | 50.140 | 9.347 |
| SMDEPRT1 | Deportment scale--average of standardized on following variables: days absent from school but not sick, days tardy to school, discipline problems in school, suspended from school, in trouble with the law, and cut classes sometimes | 4397 | 0.049 | 3.476 |
| VERBMDD1 | Missing data for verbal test | 4402 | 0.104 | 0.306 |
| MATHMDD1 | Missing data dummy for math test | 4402 | 0.115 | 0.319 |
| WAGE1 | Hourly wage on current/most recent job | 4288 | 3.018 | 1.118 |
| HRSWRK1 | Hours worked per week in current/most recent job | 4297 | 19.150 | 12.244 |
| ANNHRS1 | Approximate annual hours worked | 4285 | 667.810 | 579.535 |
| NVRWRK1 | Never worked dummy--1=never worked, 0=worked | 4402 | 0.055 | 0.227 |
| CTRNREJ3 | Current job related to high school vocational training? 1=yes, 0=no | 2105 | 0.040 | 0.196 |
| CHOURSJ3 | Hours worked per week on current/most recent job | 3898 | 34.421 | 14.321 |
| CEWAGEJ3 | Hourly wage of current/most recent job | 3073 | 5.554 | 4.312 |
| EMPLOJT3 | Amount of OJT on current/most job | 2628 | 101.727 | 371.377 |
| TOTWKS | Weeks worked since high school | 4374 | 111.344 | 50.472 |
| MUNEMPL3 | Months unemployed since high school | 4339 | 1.619 | 3.720 |
| EDASP3 | Level of educational expectation--approx yrs | 4381 | 15.026 | 2.247 |
| OCCASP3 | Level of occupartional expectation--Duncan SEI | 4036 | 53.347 | 21.061 |
| TOTCTIM3 | Time enrolled in college since high school | 4373 | 1.460 | 1.265 |
| ENRLCOL3 | Enrolled in college at 2nd follow-up? 1=yes, 0=no | 4402 | 0.375 | 0.484 |

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Guidance Program Variables -- Statistics for Sophomores

| | | | | |
|---|---|---|---|---|
| WKPREPSG | Guidance goal: preparation for work roles--ranking out of 4 goals | 10126 | 1.824 | 0.952 |
| GROWTHSG | Guidance goal: personal growth and development --ranking out of 4 goals | 10172 | 2.402 | 1.139 |
| PSTSECSG | Guidance goal: prepare students for success in Guidance goal: prepare students for success in Guidance goal: prepare students for success in post secondary schooling--ranking out 4 goals | 10126 | 2.760 | 0.954 |
| GDPLANSG | Written career guidance plan? 1=yes, 0=no | 10290 | 0.586 | 0.493 |

Table 1-continued

| | | | | |
|---|---|---|---|---|
| COUNSSTU | Counselor to student ratio | 9572 | 0.004 | 0.005 |
| PSTOURS_ | Student exposure to tours of post secondary instutions | 9581 | 87.921 | 222.948 |
| OCCINFO_ | Student exposure to occupational information-- Student exposure to occupational information--average of several items | 10362 | 176.691 | 161.124 |
| COUNSEL_ | Exposure of students to counseling--average of 2 items, one for indiv counseling & 1 for group counseling | 9962 | 623.696 | 444.686 |
| COUTIMNG | Estimated counselor time spent in nonguidance activities | 10437 | 44.045 | 27.497 |
| COUTIMGI | Estimated counselor time spent in guidance activities | 10327 | 137.890 | 58.242 |
| COUNATT | Index of counselor attitudes toward the school and guidance program--7 agree-disagree items | 10370 | 3.928 | 0.832 |

istics, school experiences, career aspirations, attitudes toward work, part-time work during high school, and a number of other topics. The first follow-up for the younger cohort repeated most of the questions in the base-year questionnaire, thus permitting extensive analysis of change. The first and second follow-ups of the older cohort and second follow-up of the younger cohort requested detailed information regarding work, family formation, education, military service, and attitudes. In addition to the students questionnaire data, a lengthy questionnaire was completed by the principal or other administrator of each school during the first two waves of data collection, students completed cognitive tests, teachers completed a brief checklist in the base-year only, and a subsample of parents completed base-year questionnaires. (See Jones et al. [1983] and Frankel et al. [1981] for more detail).

In addition to the primary HSB data, five research institutions formed a consortium to collect supplemental data from principals, teachers, and other staff in approximately half of the original HSB schools. Members of the consortium were as follows:

- The National Center for Research in Vocational Education
  The Ohio State University
  Columbus, OH 43210-1090

- The Wisconsin Center for Education Research
  The University of Wisconsin-Madison
  Madison, WI 53706

- The Institute for Research in Educational Finance and Governance
  Stanford University
  Stanford, CA 94305

- The Center for Educational Policy and Management
  The University of Oregon
  Eugene, OR 97403

- The Center for Social Organization of Schools
  Johns Hopkins University
  Baltimore, MD 21218

Members of the consortium shared expenses of a subcontract with NORC to collect the data, cooperated in constructing the survey questionnaires, and divided the work of data preparation. Data collection for the Supplemental Survey occurred in the spring of 1984. It would have been preferable to have coordinated the timing of this data collection with that of the first follow-up HSB survey in order to describe schools during the time period in which respondents were in attendance. The generally slow pace of change in institutions such as schools, however, suggests that the timing of the Supplemental Survey is not a serious enough problem to distort the major patterns of relationships.

Five questionnaires were prepared for the Supplemental HSB survey, one corresponding to each of five types of respondents: high school principal, teachers, vocational coordinator, head of guidance, and community service coordinator. Up to 30 teachers per school completed the teacher questionnaire; only one respondent per school completed each of the other questionnaires. (See Jones, Knight, and Ingels [1984] for more detail on the Supplemental Data collection).

This study makes use of the base-year and first and second follow-up questionnaire and test data on both cohorts base-year principal data from the main HSB survey, and information from the guidance questionnaire associated with the Supplemental Survey. Information from the guidance questionnaire of the Supplemental Survey and the principal questionnaire of the main survey was merged with student data such that each student (up to 36) in a given school was assigned the same value on all variables taken from those two questionnaires. Because less than half of the original HSB schools participated in the Supplemental Survey, the sample size of the merged data was 10,955.

## Data Analysis

The HSB data were analyzed by multivariate statistical methods. Estimates of effects were produced by regression methods. Models of the following general form were estimated:

$$y = a'x + b'g + u$$

where

$y$ = outcome, such as work values, locus of control, or post-high school wages

$x$ = vector of control variables (including time 1 $y$ in the case of in-school outcomes)

$g$ = vector of career guidance program characteristics

$u$ = disturbances

$a,b$ = conformable vectors of coefficients (' indicates tranpose)

Because of the broad applicability of ordinary least squares (OLS) regression, the primary statistical tool was OLS. It is flexible enough to calculate ANOVA and ANCOVA parameters for unbalanced designs and is robust under violation of assumptions. Where categorical outcomes, such as college attendance or unemployment, are the outcomes, methods such as probit or logit exhibit statistical qualities generally superior to OLS regression. These methods resolve the problem of heteroscedasticity that arises when OLS is used with categorical outcomes and ensure that predicted values fall within the required 0-1 range. The substantive basis of probit and logit also is more pleasing for categorical outcomes than is the case for OLS, but neither method is connected in an obvious way to a model of change over time.[1] On the other hand, OLS is substantially less expensive to use and generally produces results that are close to those calculated from other methods.

Because of the longitudinal nature of the HSB data, estimation bias due to structural "simultaneity" of variables is not likely to be as serious a problem as in cross-sectional data. When simultaneity does arise, methods such as two stage least squares and maximum likelihood estimation may be used. The preferred strategy in the present study, however, was to write an explicit model of change over time of the following general form:

$$dy/dt = ay + bx$$

where $dy/dt$ is the derivative of the dependent variable with respect to time (rate of change), $y$ = current value of the dependent variable, $x$ = independent variables, and $a$ and $b$ are parameters. This is a standard form of a linear differential equation; its solution is straightforward. The advantage of basing statistical analyses on such a formulation is that it connects the statistical calculations to an explicit conception of how the process under study unfolds over continuous time. This strategy for generating statistically models generally leads to a cross-lagged regression in which simultaneity bias is not a problem.

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[1] Coleman (1981) shows that logit is appropriate for cross-sectional data when an exponential model is used to describe instantaneous change in transitional rates, but this result leaves unresolved how to interpret either logit or probit when applied to longitudinal data.

# CHAPTER 4

# FINDINGS

The report of findings of the study is organized by cross-classifying three variables. These variables are type of respondent (HSB sophomore cohort and HSB senior cohort), type of model specification (linear and interaction), and time point where the outcome variables were measured (during high school and post-high school). Results for sophomores are reported first. The discussion of results for sophomores is divided into four categories: linear models with in-school outcomes, linear models with post-high school outcomes, interaction models with in-school outcomes, and interaction models with post-high school outcomes. Results for the senior cohort are reported for linear models and post-high school outcomes only.

The reason for omitting the in-school outcomes from the analysis with the senior cohort is that data are available for only one time point during high school for the senior cohort. Consequently, determining an appropriate statistical model is difficult due to simultaneity bias that likely would arise if, for example, one used senior grades to predict senior educational expectations (or the reverse). In contrast, with the sophomore cohort, grades from respondents' sophomore year can be used to predict their educational expectation as a senior while controlling for educational expectation measured at the sophomore year, as described in chapter 3.

The tables presenting the results are formatted so that each column corresponds to one dependent variable (or equation). Cases with missing data on the dependent variables in each equation were eliminated from the calculations. Means were substituted for missing independent variables, and, in some instances, missing data dummies were included. No table nor combination of tables reports estimates of coefficients on all variabes included in the equations. For example, results for region dummy variables and missing data dummy variables are not reported. The mean substitution introduces generally minor bias into the estimates but that bias is probably less serious than the loss of sampling stability that would occur if a "linewise deletion" procedure were used. Use of "pairwise deletion" cannot be justified when some variables (e.g., wage) are undefined for part of the sample.

## Results for Sophomores

Linear model results are presented first. Results for interaction models are then presented.

### Linear Models

In-school outcomes. As defined in chapter 3, there are nine in-school outcomes in the sophomore cohort for which statistical calculations are reported. These nine variables are (1) self-esteem (CONCPT2), (2) internal locus of control (LOCUS2), (3) educational expectation/aspiration (EDASP2)[2], (4) occupational expectation/aspiration (OCCASP2),[3] (5) perceived college ability (COLABL2), (6) self-report grade point average in high school (AVGRAD2), (7) verbal test score (VERBAL2), (8) math test score (MATHSD22), and (9) a school deportment index (SMDEPRT2). Table 2 displays regression estimates of the total effects of status background and personal characteristics on these nine outcomes; these are reduced-form estimates. The top panel of table 2 shows the estimates for time 1 outcomes (sophomore measures), and the second panel displays results for time 2 outcomes (senior measures).

The reduced form estimates in table 2 generally behave as expected. The SES index (SESNIN1M) exercises a strong and highly significant positive effect at both time points on all outcomes except school deportment (SMDEPRT2), and its effect on deportment is significantly negative. Since the deportment index is a measure of "misbehavior" in school, this result is expected. Family income (in log units) behaves much like the status index, except that the coefficients (standardized) generally are smaller. The income effect on deportment is negative at time 1, but insignificant; it is significantly positive at time 2, however.

The effects of the parent/guardian variables are interesting, though generally small. Presence of one's biological mother in the household tends to generate socially approved results. Mother present raises self-esteem (CONCPT2), internal locus of control (LOCUS2), level of educational expectation (EDASP2), level of occupational expectation (OCCASP2), perceived college ability (COLABL2), grades in high school (AVGRAD2), verbal test score (VERBAL2), and math test score (MATHSD22). Mother present also reduces misbehavior in school (SMDEPRT2). Not all these effects are statistically significant, but each is consistent between time 1 and time 2. It is interesting to note that mother being a full-time homemaker (MHOMAKR1) does not reveal a similar consistent pattern, though it does raise grades at both time points. In contrast, presence of the biological father in the home, if anything, tends to have undesirable consequences--lower

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[2] This is an expectation variable.

[3] This is an expectation variable.

## TABLE 2

## EFFECT ESTIMATES OF BACKGROUND VARIABLES ON IN-SCHOOL OUTCOMES: SOPHOMORE COHORT

| Independent Variables | Base-Year Outcomes | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Dependent Variables | | | | | | | | |
| | CONCPT1 | LOCUS1 | EDASP1 | OCCASP1 | COLABL1 | AVGRAD1 | VERBAL1 | MATHSD21 | SMDEPRT1 |
| SEXCMP2 | -0.9088E-01<br>-0.0764**** | 0.6394E-01<br>0.0570**** | 0.3187<br>0.0608**** | 11.27<br>0.2536**** | 0.7053E-01<br>0.0344*** | 0.2494<br>0.1594**** | 1.224<br>0.0677**** | -0.9206<br>-0.0489**** | -0.9019<br>-0.1277**** |
| BLACKCMP | 0.1832<br>0.1078**** | -0.2403E-01<br>-0.0150 | -0.6082E-01<br>-0.0080 | -1.946<br>-0.0311 | 0.1393<br>0.0470* | -0.2374<br>-0.1085**** | -5.092<br>-0.1967**** | -5.049<br>-0.1870**** | 0.7164<br>0.0727** |
| HISPNCMP | 0.5696E-02<br>0.0033 | -0.8573E-01<br>-0.0529**** | 0.3361E-01<br>0.0044 | 0.9633<br>0.0149 | 0.1542E-01<br>0.0052 | -0.1232<br>-0.0547**** | -3.504<br>-0.1343**** | -2.782<br>-0.1025**** | 0.1884<br>0.0186 |
| ASIAN | -0.1199<br>-0.0271* | -0.8008E-01<br>-0.0190 | -1.058<br>-0.0524**** | -5.983<br>-0.0360** | -0.2416<br>-0.0316** | -0.2569<br>-0.0448*** | -2.910<br>-0.0430**** | -2.611<br>-0.0372** | 1.559<br>0.0602**** |
| OTHERNW | -0.4116E-01<br>-0.0271 | 0.2594E-01<br>0.0181 | -1.056<br>-0.1560**** | -5.941<br>-0.1056**** | -0.2338<br>-0.0886**** | -0.1393<br>-0.0709** | 0.1684<br>0.0073 | -0.8855<br>-0.0366 | 0.2888<br>0.0326 |
| SESNIN1M | 0.1127<br>0.1134**** | 0.1727<br>0.1842**** | 1.693<br>0.3875**** | 8.480<br>0.2245**** | 0.4992<br>0.2925**** | 0.2529<br>0.1918**** | 4.817<br>0.3146**** | 4.502<br>0.2827**** | -0.5399<br>-0.0909**** |
| MHOMAKR1 | 0.4303E-01<br>0.0235* | 0.9715E-02<br>0.0056 | 0.3918E-02<br>0.0005 | 0.5703<br>0.0081 | 0.1073E-01<br>0.0034 | 0.6152E-01<br>0.0255** | -0.2441E-02<br>-0.0001 | 0.2690<br>0.0094 | -0.4554<br>-0.0418**** |
| MOTHER1 | 0.2244E-01<br>0.0103 | 0.4670E-01<br>0.0226* | 0.1436<br>0.0140 | 0.1071<br>0.0013 | 0.6197E-01<br>0.0164 | 0.5804E-01<br>0.0204 | 1.357<br>0.0408**** | 1.182<br>0.0341*** | -0.8824<br>-0.0687**** |
| FATHER1 | -0.4079E-01<br>-0.0288* | -0.4588E-01<br>-0.0345** | -0.2770<br>-0.0441*** | -2.778<br>-0.0529**** | -0.9038E-01<br>-0.0369*** | 0.2114E-01<br>0.0115 | -0.1376<br>-0.0064 | 0.4552<br>0.0203 | -0.5303<br>-0.0639**** |
| OTMGRD1 | -0.2081E-01<br>-0.0098 | -0.4912E-01<br>-0.0247* | -0.2321<br>-0.0248* | -1.158<br>-0.0148 | -0.8519E-01<br>-0.0233* | -0.4780E-01<br>-0.0173 | -0.7147<br>-0.0224* | -0.6228<br>-0.0187 | 0.1702<br>0.0137 |
| OTFGRD1 | -0.8341E-01<br>-0.0267* | -0.6747E-01<br>-0.0229* | 0.1523E-01<br>0.0010 | -0.7223<br>-0.0060 | -0.1422<br>-0.0263* | -0.7135E-01<br>-0.0175 | -0.6267<br>-0.0133 | -0.1544<br>-0.0031 | 0.3582<br>0.0195 |
| LFMINC1M | 0.1056<br>0.0989**** | 0.9495E-01<br>0.0922**** | 0.6191<br>0.1284**** | 3.084<br>0.0744**** | 0.2107<br>0.1117**** | 0.1180<br>0.0821**** | 1.548<br>0.0927**** | 1.540<br>0.0887**** | -0.1291<br>-0.0199 |
| ADJ R-SQ | 0.0485 | 0.0852 | 0.2043 | 0.1247 | 0.1331 | 0.1136 | 0.2982 | 0.2332 | 0.0621 |
| NO./CASES | 10078 | 10057 | 7764 | 8845 | 9893 | 10374 | 9791 | 9728 | 10457 |

Table 2-continued

First Follow-Up Outcomes

| Independent Variables | Dependent Variables | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CONCPT2 | LOCUS2 | EDASP2 | OCCASP2 | COLABL2 | AVGRAD2 | VERBAL2 | MATHSD22 | SHDEPRT2 |
| SEXCMP2 | -0.6791E-01 | 0.6045E-01 | 0.1947 | 9.135 | 0.1045 | 0.2614 | 1.370 | -1.250 | -1.316 |
| | -0.0582**** | 0.0690**** | 0.0387**** | 0.2030**** | 0.0569**** | 0.1828**** | 0.0716**** | -0.0604**** | -0.1539**** |
| BLACKCMP | 0.1948 | -0.2302E-01 | -0.2682 | -1.142 | 0.1197 | -0.2253 | -5.638 | -6.270 | -0.4982 |
| | 0.1163**** | -0.0137 | -0.0376 | -0.0182 | 0.0443 | -0.1114**** | -0.2119**** | -0.2169**** | -0.0416 |
| HISPNCMP | -0.1177E-01 | -0.1150 | -0.8409E-01 | 0.8226E-01 | -0.9387E-01 | -0.1801 | -3.684 | -3.170 | 0.2182 |
| | -0.0069 | -0.0672**** | -0.0115 | 0.0013 | -0.0341** | -0.0862**** | -0.1339**** | -0.1061**** | 0.0177 |
| ASIAN | 0.1635E-01 | -0.1348 | -1.298 | -5.026 | -0.2485 | -0.1508 | -3.459 | -3.784 | 0.1873 |
| | 0.0037 | -0.0307* | -0.0706**** | -0.0299* | -0.0339** | -0.0274* | -0.0496**** | -0.0502**** | 0.0059 |
| OTHERNW | -0.9339E-02 | 0.3206E-01 | -1.178 | -4.166 | -0.1339 | -0.7015E-01 | 0.1589 | -1.948 | -0.4491 |
| | -0.0062 | 0.0214 | -0.1844**** | -0.0737** | -0.0556* | -0.0386 | 0.0066 | -0.0749*** | -0.0418 |
| SESNIN1M | 0.1095 | 0.1604 | 1.641 | 8.244 | 0.4087 | 0.2206 | 4.899 | 5.289 | -0.2764 |
| | 0.1110**** | 0.1627**** | 0.3842**** | 0.2172**** | 0.2609**** | 0.1815**** | 0.3049**** | 0.3039**** | -0.0384*** |
| MHOMAKR1 | 0.9313E-02 | -0.8568E-02 | 0.1635E-01 | -0.1359 | -0.2568E-01 | 0.6499E-01 | -0.2516 | 0.1262 | -0.4087 |
| | 0.0052 | -0.0048 | 0.0021 | -0.0019 | -0.0091 | 0.0296** | -0.0085 | 0.0040 | -0.0310** |
| MOTHER1 | 0.1786E-01 | 0.6510E-01 | 0.1322 | 0.1536 | 0.8268E-01 | 0.1043E-01 | 1.786 | 1.524 | -0.5431 |
| | 0.0083 | 0.0304** | 0.0142 | 0.0018 | 0.0234* | 0.0039 | 0.0514**** | 0.0404**** | -0.0349** |
| FATHER1 | -0.3388E-01 | -0.3058E-01 | -0.1382 | -1.702 | -0.3132E-01 | 0.2506E-01 | 0.5834E-01 | 0.5233 | -0.8302 |
| | -0.0243* | -0.0221 | -0.0231* | -0.0320** | -0.0139 | 0.0146 | 0.0026 | 0.0214* | -0.0824**** |
| OTMGRD1 | -0.7697E-02 | 0.2669E-02 | -0.2816 | -1.716 | -0.1448E-01 | -0.2725E-01 | -0.6500 | -0.4567 | 0.1956E-01 |
| | -0.0037 | 0.0013 | -0.0314** | -0.0216* | -0.0043 | -0.0105 | -0.0193* | -0.0125 | 0.0013 |
| OTFGRD1 | -0.3790E-01 | -0.8811E-01 | -0.3217 | -0.4892 | -0.4019E-01 | -0.9625E-01 | -0.8541 | -0.9705 | 0.5424 |
| | -0.0124 | -0.0288** | -0.0244* | -0.0041 | -0.0079 | -0.0248* | -0.0171 | -0.0180 | 0.0243* |
| LFMINC1M | 0.7256E-01 | 0.1018 | 0.5551 | 2.904 | 0.1598 | 0.5922E-01 | 1.670 | 1.871 | 0.2146 |
| | 0.0673**** | 0.0946**** | 0.1193**** | 0.0696**** | 0.0930**** | 0.0445**** | 0.0951**** | 0.0986**** | 0.0273* |
| ADJ R-SQ | 0.0344 | 0.0826 | 0.2049 | 0.0998 | 0.1088 | 0.1138 | 0.3098 | 0.2614 | 0.0433 |
| NO./CASES | 9777 | 9755 | 9547 | 9558 | 8815 | 9590 | 9859 | 9678 | 10397 |

NOTE: Unstandardized coefficients appear in the first row of each pair, and standardized coefficients appear in the second.
$*p \leq .05$ $** p \leq .01$ $*** p \leq .001$ $**** p \leq .0001$

self-esteem, lower internal locus of control, lower educational and occupational expectations, and lower perceived college ability. These effects diminish from time 1 to time 2, however. The primary function of the father appears to be as a disciplinarian; his presence in the home reduces misbehavior in school. Presence of a guardian (male or female) in the home tends to reduce all nine outcomes except misbehavior in school, which it tends to exacerbate slightly. All these effects are small and few are statistically significant, however.

The race and gender variables also are associated with some fairly strong effects. Among the most notable are gender (SEXCMP2) effects on grades and deportment ("misbehavior")--positive in the first case and negative in the second. It is also interesting that being female tends to *reduce* self-esteem and *raise* internal locus of control. These effects are fairly large and highly statistically significant at both time points. Effects of being black (BLACKCMP) are anomalous. On the one hand, blacks exhibit higher self-esteem, *ceteris paribus*. On the other hand, they are lower on the performance variables (tests).

If a single linear differential equation (or system of equations) describes the dynamics of the change process over time, then we expect to see a decline in the coefficients from time 1 to time 2 (Tuma and Hannan 1984; Hotchkiss 1984). Hence, the coefficients in the top panel (time 1) should be larger than those in the bottom panel (time 2) of table 2. This expectation is stronger for the larger coefficients, since the small ones may be exhibiting random variation around zero. This pattern holds up fairly well for the status index on nearly all variables, but just the opposite pattern tends to be manifest in race and gender effects on behaviors (deportment) and achievement (grades and tests). This result suggests that the race and gender differentials become increasingly fixed over time.

Table 3 presents estimates of the feedback effects of the in-school variables on each other. Each equation (column in table 3) contains controls for all background variables, numerous lagged in-school variables, and all the guidance program variables, as described in chapter 3.

The estimates of feedback effects reveal few surprises. Many of these variables exercise strong feedback effects on each other in a manner to be expected *a priori*. Educational and occupational plans, perceived college ability, tests, grades, and homework display highly significant effects on each other. Self-esteem and locus of control also enter into this system in a nontrivial manner, but coefficients associated with them generally are smaller than in the other cases. The deportment variable is not associated with many strong effects. The negative effect of deportment on grades is sensible, however. The tendency for both homework and grades to inhibit misbehavior also is easy to explain, but the positive effect of verbal test score (*ceteris paribus*) on misbehavior is anomalous. The most interesting

## TABLE 3

### EFFECT ESTIMATES OF NINE BASE-YEAR IN-SCHOOL OUTCOMES ON THE SAME NINE VARIABLES MEASURED AT FIRST FOLLOW-UP: SOPHOMORE COHORT

| Independent Variables | Dependent Variables | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CONCPT2 | LOCUS2 | EDASP2 | OCCASP2 | COLABL2 | AVGRAD2 | VERBAL2 | MATHSD22 | SMDEPRT2 |
| CONCPT1 | 0.3770<br>0.3773**** | 0.8970E-01<br>0.0898**** | 0.1372E-01<br>0.0032 | 0.8908E-01<br>0.0023 | 0.2642E-01<br>0.0167 | 0.4837E-02<br>0.0039 | -0.1372<br>-0.0084 | -0.3351<br>-0.0188** | -0.1600<br>-0.0218* |
| LOCUS1 | 0.6406E-01<br>0.0606**** | 0.3110<br>0.2943**** | 0.7743E-01<br>0.0168 | 0.9206<br>0.0224* | 0.6640E-01<br>0.0395**** | 0.7320E-02<br>0.0056 | 0.9767<br>0.0560**** | 0.5010<br>0.0265**** | -0.5315E-01<br>-0.0068 |
| EDASP1 | 0.3043E-02<br>0.0118 | 0.3996E-03<br>0.0016 | 0.2952<br>0.2663**** | 0.7116<br>0.0717**** | 0.1089E-01<br>0.0265* | 0.5509E-02<br>0.0172* | 0.9456E-01<br>0.0223*** | 0.2504<br>0.0546**** | -0.1183E-02<br>-0.0006 |
| OCCASP1M | 0.1256E-03<br>0.0044 | 0.7831E-03<br>0.0275** | 0.8901E-02<br>0.0723**** | 0.2362<br>0.2164**** | 0.1943E-02<br>0.0431**** | 0.2682E-03<br>0.0076 | 0.1382E-01<br>0.0296**** | 0.2900E-02<br>0.0057 | -0.1470E-02<br>-0.0070 |
| COLABL1 | 0.3243E-01<br>0.0554**** | 0.2672E-01<br>0.0457**** | 0.2203<br>0.0867**** | 1.309<br>0.0566**** | 0.2782<br>0.2912**** | 0.6677E-02<br>0.0090 | 0.2730<br>0.0284**** | 0.4898<br>0.0471**** | 0.1678E-01<br>0.0039 |
| HOMWRK1 | 0.3050E-02<br>0.0176 | 0.2872E-02<br>0.0166 | 0.6780E-01<br>0.0906**** | 0.1998<br>0.0299** | 0.8038E-02<br>0.0295** | 0.6680E-02<br>0.0314**** | 0.6255E-01<br>0.0219*** | 0.1036<br>0.0336**** | -0.6174E-01<br>-0.0484**** |
| AVGRAD1 | 0.8619E-02<br>0.0115 | -0.6145E-02<br>-0.0082 | 0.2466<br>0.0757**** | 0.7583<br>0.0262* | 0.1331<br>0.1086**** | 0.5662<br>0.5943**** | 0.7431<br>0.0605**** | 1.474<br>0.1108**** | -0.4876<br>-0.0886**** |
| VERBAL1M | 0.2712E-02<br>0.0404* | 0.1026E-01<br>0.1528**** | 0.2700E-01<br>0.0938**** | 0.2633<br>0.1022**** | 0.1059E-01<br>0.0995**** | 0.6584E-02<br>0.0802**** | 0.5728<br>0.5245**** | 0.1485<br>0.1254**** | 0.1907E-01<br>0.0390* |
| MATHSD1M | -0.2853E-03<br>-0.0044 | -0.1954E-02<br>-0.0304* | 0.2146E-01<br>0.0779**** | 0.6226E-02<br>0.0025 | 0.3614E-02<br>0.0360** | 0.5355E-02<br>0.0683**** | 0.5603E-01<br>0.0532**** | 0.5501<br>0.4826**** | -0.6681E-02<br>-0.0142 |
| SMDEPRT1 | -0.3289E-02<br>-0.0197 | -0.2538E-02<br>-0.0152 | -0.4062E-02<br>-0.0056 | -0.1673E-01<br>-0.0029 | -0.5548E-02<br>-0.0189* | -0.8958E-02<br>-0.0397**** | -0.2838E-01<br>-0.0104 | -0.5000E-02<br>-0.0017 | 0.4195<br>0.3441**** |
| ADJ R-SQ | 0.2269 | 0.2803 | 0.4819 | 0.2108 | 0.3464 | 0.5633 | 0.7391 | 0.6928 | 0.1953 |
| NO./CASES | 9777 | 9755 | 9547 | 9558 | 9815 | 9590 | 9859 | 9678 | 10397 |

**NOTE:** Unstandardized coefficients appear in the first row of each pair, and standardized coefficients appear in the second.
*$p \leq .05$ ** $p \leq .01$ *** $p \leq .001$ **** $p \leq .0001$

patterns in table 3 involve the feedback effects between the verbal test and various attitudinal variables. Verbal test scores exercise positive effects on self-esteem, internal locus of control, educational expectation, and occupational expectation. Each of these variables except self-esteem, in turn affects performance on the verbal test. Without exception, however, the effect of the test on the attitude is much stronger than the reverse effect. The effect of verbal test on locus of control is particularly strong.

Estimates of the effects of the guidance program variables are shown in table 4. The reader is reminded that each of these guidance program variables describes a school; all of its values are the same for each student attending a given school. Thus, no measures of individual student exposure to guidance activities are included. The variables do index opportunity for exposure.

There are few statistically significant coefficients in the table, and all coefficients are small in magnitude. The strongest coefficients in the table are associated with student exposure to occupational information (OCCINFO_) (average for the school); students in schools that emphasize occupational information tend to be worse on math and verbal tests than students attending other schools. It must be remembered that these estimates were made in the presence of many controls, including lagged test scores, school dropout, and an array of SES, personal characteristics, and attitudes. In contrast, students attending schools in which many of their peers are exposed to counseling--group or individual (COUNSEL)--have higher educational expectations, stronger perceived ability to complete college, higher verbal and math test scores and, anomalously, tend to misbehave more. None of these effects are strong, but their consistency helps to bolster confidence that they are real. These results stand in contrast to the complete absence of effects using the same data reported by Hotchkiss and Dorsten (1985). The primary reason for this contrast is that Hotchkiss and Dorsten combined the counseling (COUNSEL_) and important components of the occupational information variable (OCCINFO_) into a single variable. As we see here, these two variables tend to produce effects with opposite signs. Hence, combining them would tend to produce aggregate zero effects.

Post-high school outcomes. There are 10 post-high school outcomes. These are (1) whether current job is related to high school vocational training (CTRNREJ3), (2) hours worked per week on the current job (CHOURSJ3), (3) a single job satisfaction item (JSATJOB3), (4) a job satisfaction index (JSATINDX), (5) weeks worked since high school (WEEKS3), (6) months unemployed since high school (MUNEMPL3), (7) educational expectation/aspiration (EDASP3), (8) occupational expectation/aspiration in Duncan SEI units (OCCASP3), (9) amount of time enrolled in college since high school in years (COLTIM3), and (10) current enrollment status in college--yes or no (ENRLCOL3). The enrollment and time

## TABLE 4

### EFFECT ESTIMATES OF GUIDANCE PROGRAM VARIABLES ON NINE IN-SCHOOL OUTCOMES: SOPHOMORE COHORT

| Independent Variables | Dependent Variables | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CONCPT2 | LOCUS2 | EDASP2 | OCCASP2 | COLABL2 | AVGRAD2 | VERBAL2 | MATHSD22 | SMDEPRT2 |
| WKPREPSG | 0.1591E-02 | 0.2387E-02 | -0.2220E-01 | -0.6853 | -0.1207E-02 | 0.5488E-02 | -0.1945 | -0.2249 | -0.4288E-01 |
| | 0.0026 | 0.0039 | -0.0082 | -0.0285** | -0.0012 | 0.0072 | -0.0191** | -0.0204** | -0.0094 |
| GROWTHSG | -0.8428E-02 | -0.1185E-02 | 0.8377E-02 | 0.6540E-01 | 0.2405E-02 | 0.9868E-03 | 0.4865E-01 | -0.4114E-01 | -0.4699E-01 |
| | -0.0163 | -0.0023 | 0.0037 | 0.0032 | 0.0029 | 0.0015 | 0.0057 | -0.0044 | -0.0123 |
| PSTSECSG | -0.1729E-01 | 0.4777E-03 | -0.1810E-01 | -0.3360 | -0.4051E-02 | 0.1137E-01 | 0.1574 | -0.1363 | 0.5533E-01 |
| | -0.0278* | 0.0008 | -0.0067 | -0.0140 | -0.0041 | 0.0148 | 0.0155* | -0.0124 | 0.0121 |
| PCTCONSG | 0.8216E-03 | 0.6181E-03 | 0.1617E-02 | 0.2072E-01 | -0.2702E-03 | 0.7537E-03 | -0.1502E-02 | 0.1350E-02 | -0.1538E-02 |
| | 0.0135 | 0.0102 | 0.0062 | 0.0088 | -0.0028 | 0.0101 | -0.0015 | 0.0012 | -0.0034 |
| COUNSSTU | -0.9409 | -1.993 | 1.443 | 22.39 | -0.4857 | -0.7209 | 0.3932 | 9.698 | -3.683 |
| | -0.0072 | -0.0153 | 0.0026 | 0.0045 | -0.0025 | -0.0046 | 0.0002 | 0.0042 | -0.0038 |
| OCCINFO_ | -0.4538E-04 | -0.4405E-04 | -0.4531E-03 | -0.8102E-03 | -0.3415E-04 | 0.6414E-04 | -0.1515E-02 | -0.2185E-02 | -0.1203E-03 |
| | -0.0124 | -0.0120 | -0.0289*** | -0.0058 | -0.0059 | 0.0144 | -0.0251**** | -0.0335**** | -0.0045 |
| COUNSEL_ | -0.3874E-05 | -0.1640E-05 | 0.9705E-04 | 0.9306E-03 | 0.5297E-04 | -0.1736E-04 | 0.4513E-03 | 0.3882E-03 | 0.2682E-03 |
| | -0.0029 | -0.0012 | 0.0168* | 0.0180 | 0.0251** | -0.0106 | 0.0204*** | 0.0162** | 0.0272** |
| PSTOURS_ | 0.2470E-04 | 0.1238E-04 | 0.1988E-03 | 0.4657E-03 | -0.2199E-04 | 0.4310E-04 | 0.5873E-03 | 0.4690E-03 | -0.4226E-04 |
| | 0.0092 | 0.0046 | 0.0169* | 0.0044 | -0.0053 | 0.0131 | 0.0133* | 0.0098 | -0.0021 |
| GDPLANSG | 0.1212E-01 | -0.1125E-01 | -0.1408E-01 | -0.1551E-01 | 0.1343E-01 | -0.8341E-02 | -0.1357 | 0.1642 | 0.9184E-01 |
| | 0.0102 | -0.0094 | -0.0027 | -0.0003 | 0.0072 | -0.0057 | -0.0069 | 0.0078 | 0.0105 |
| COUTIMNG | -0.1019E-03 | -0.9324E-04 | -0.9182E-04 | 0.3322E-02 | 0.4663E-03 | -0.1181E-03 | -0.4765E-02 | -0.4117E-02 | -0.7973E-04 |
| | -0.0048 | -0.0044 | -0.0010 | 0.0041 | 0.0138 | -0.0045 | -0.0137* | -0.0109 | -0.0005 |
| COUTIMGI | 0.1444E-03 | -0.7032E-04 | 0.3863E-03 | 0.1260E-02 | 0.8086E-04 | -0.1446E-03 | -0.5692E-03 | 0.8216E-03 | -0.1929E-03 |
| | 0.0141 | -0.0069 | 0.0089 | 0.0033 | 0.0050 | -0.0117 | -0.0034 | 0.0046 | -0.0026 |
| COUNATT | 0.7726E-02 | -0.4154E-02 | 0.8876E-01 | 0.3131 | 0.1200E-01 | 0.7819E-02 | -0.1031 | -0.3584E-02 | -0.7591E-01 |
| | 0.0110 | -0.0059 | 0.0293*** | 0.0116 | 0.0108 | 0.0091 | -0.0089 | -0.0003 | -0.0147 |
| ADJ R-SQ | 0.2269 | 0.2803 | 0.4819 | 0.2108 | 0.3464 | 0.5633 | 0.7391 | 0.6928 | 0.1953 |
| NO./CASES | 9777 | 9755 | 9547 | 9558 | 8815 | 9590 | 9859 | 9878 | 10397 |

NOTE:s Unstandardized coefficients appear in the first row of each pair, and standardized coefficients appear in the second.
*$p \leq .05$ ** $p \leq .01$ *** $p \leq .001$ **** $p \leq .0001$

in college variables include any type of post secondary institution.[4] Table 5 shows estimates of background variables on these 10 post-high school outcomes. Effects of the exogenous variables on post-high school educational and occupational expectations are similar to the effects of those variables measured during school. The effects of the SES index on these two career planning variables are particularly strong and positive. The R-squares for the labor market variables are small but are in the range reported in past research.[5] Being female has a strong negative effect on hours worked per week (-6.568) and on weeks worked (-7.1 out of 21). Being black substantially increases unemployment (1.659 months out of 21, nearly 1 month per year.). SES suppresses hours worked per week (probably due to attendance at college), decreases months unemployed, but does not show strong effects on weeks worked. It should be noted that past research shows that SES effects are stronger when labor market outcomes are measured after a longer period since leaving school. Parental income also has a negative effect on unemployment and a slight positive effect on weeks worked.

The most interesting findings in the table are, in effect, "nonfindings." The R-squares for both job satisfaction variables (JSATJOB3, JSATINDX) are essentially zero. So are the R-squares for training related placement. The importance of these results for job satisfaction stems from the important role that job satisfaction plays in career development theory (see, e.g., Super 1957, Lofquist and Dawis 1969). Training related placement is an important outcome because consistent findings at the National Center show that positive effects of secondary vocational education are contingent on working in a job that is related to one's vocational specialty (Campbell et al. 1986).

Effects of these exogenous variables on postsecondary schooling are in agreement with past research. The status index has a large effect both on current enrollment in college (ENRLCOL3) and on amount of time since high school enrolled in college (COLTIM3). Being female also has a positive effect on both of these outcomes, and being black has a negative effect in both cases. Parental income has a positive effect on enrollment and on time since high school spent in college.

Estimates of effects of the time 1 in-school variables (lagged endogenous variables) on the post-high school outcomes are displayed in table 6. The strongest effects are on the two postsecondary education variables. Both are strongly influenced by educational expectation as a sophomore, sophomore occupational

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[4] Similar results were found when attendance at a 4-year college or university was the dependent variable.

[5] Recall that wages for sophomores were omitted from this report due to extremely small R-square when measured during the first 2 years after high school.

## TABLE 5

## EFFECT ESTIMATES OF BACKGROUND VARIABLES ON TEN POST-HIGH SCHOOL OUTCOMES: SOHPOMORE COHORT

| Independent Variables | Dependent Variables | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CTRNREJ3 | CHOURSJ3 | JSATJOB3 | JSATINDX | WEEKS3 | MUNEMPL3 | EDASP3 | OCCASP3 | COLTIM3 | ENRLCOL3 |
| SEXCMP2 | 0.2165E-02 | -6.568 | 0.3707E-01 | 0.1532E-01 | -7.131 | 0.8279E-01 | -0.1088E-01 | 8.158 | 0.7622E-01 | 0.4918E-01 |
| | 0.0043 | -0.2229**** | 0.0257 | 0.0139 | -0.1121**** | 0.0101 | -0.0022 | 0.1888**** | 0.0584**** | 0.0494**** |
| BLACKCMP | 0.9152E-02 | -0.3752 | -0.8763E-01 | -0.3874E-01 | -4.800 | 1.659 | -0.1224 | -0.2883 | -0.1090 | -0.7725E-01 |
| | 0.0129 | -0.0088 | -0.0407 | -0.0235 | -0.0538 | 0.1454**** | -0.0185 | -0.0047 | -0.0595* | -0.0556* |
| HISPNCMP | 0.1601E-02 | -0.8187 | -0.9723E-02 | -0.8960E-02 | -2.983 | 0.4568E-01 | 0.7235E-02 | 0.1717 | -0.9733E-02 | 0.1958E-04 |
| | 0.0024 | -0.0207 | -0.0050 | -0.0047 | -0.0352* | 0.0042 | 0.0012 | 0.0030 | -0.0056 | 0.0000 |
| ASIAN | 0.2201E-01 | 2.405 | -0.9457E-02 | 0.8767E-02 | 0.4942 | 0.1260 | -1.240 | -4.796 | -0.2978 | -0.2254 |
| | 0.0152 | 0.0278 | -0.0022 | 0.0026 | 0.0027 | 0.0055 | -0.0934**** | -0.0398* | -0.0812**** | -0.0810**** |
| OTHERNW | 0.7171E-02 | 1.859 | 0.8606E-02 | 0.3695E-01 | 9.396 | -0.3262 | -0.9801 | -2.812 | -0.1985 | -0.1397 |
| | 0.0118 | 0.0505 | 0.0047 | 0.0266 | 0.1225**** | -0.0334 | -0.1727**** | -0.0542 | -0.1267**** | -0.1174**** |
| SESNIN1M | 0.1440E-01 | -2.287 | 0.5611E-01 | 0.2487E-01 | -2.724 | -0.6047 | 1.335 | 6.699 | 0.3162 | 0.2343 |
| | 0.0335 | -0.0812**** | 0.0456** | 0.0264 | -0.0505** | -0.0879**** | 0.3334**** | 0.1831**** | 0.2865**** | 0.2793**** |
| MHOMAKR1 | -0.2033E-02 | -1.330 | 0.1672E-01 | 0.4209E-01 | -2.878 | -0.1324 | 0.4655E-01 | 0.5327 | 0.5525E-01 | 0.3285E-01 |
| | -0.0027 | -0.0288* | 0.0074 | 0.0244 | -0.0294* | -0.0105 | 0.0063 | 0.0079 | 0.0272* | 0.0213 |
| MOTHER1 | 0.5488E-02 | -0.2344 | 0.2547E-01 | 0.8227E-02 | 2.058 | -0.1729 | 0.2000 | 1.031 | 0.5629E-01 | 0.4276E-01 |
| | 0.0059 | -0.0043 | 0.0096 | 0.0040 | 0.0176 | -0.0118 | 0.0233 | 0.0132 | 0.0238 | 0.0239 |
| FATHER1 | -0.2577E-02 | 0.2638 | 0.5223E-02 | 0.6575E-02 | 1.279 | 0.1040 | -0.2339 | -1.588 | 0.3475E-01 | 0.2709E-01 |
| | -0.0042 | 0.0076 | 0.0031 | 0.0050 | 0.0170 | 0.0109 | -0.0421** | -0.0311* | 0.0226 | 0.0232 |
| OTMGRD1 | 0.1432E-01 | 2.473 | -0.6001E-01 | -0.1072E-01 | 2.229 | -0.4981E-01 | -0.2789 | -1.689 | -0.7286E-01 | -0.8709E-01 |
| | 0.0159 | 0.0479** | -0.0238 | -0.0056 | 0.0196 | -0.0035 | -0.0335** | -0.0220 | -0.0315* | -0.0499**** |
| OTFGRD1 | -0.6975E-02 | 2.488 | 0.3863E-01 | 0.8276E-01 | -1.112 | 0.1373 | -0.3888 | -3.948 | -0.1450 | -0.7388E-01 |
| | -0.0052 | 0.0322* | 0.0101 | 0.0280 | -0.0066 | 0.0065 | -0.0316* | -0.0348* | -0.0423** | -0.0287* |
| LFMINC1M | -0.8304E-02 | -0.2488 | 0.1233E-01 | 0.1210E-01 | 2.221 | -0.4387 | 0.4418 | 2.190 | 0.8696E-01 | 0.5291E-01 |
| | -0.0178 | -0.0089 | 0.0091 | 0.0116 | 0.0375* | -0.0582**** | 0.1009**** | 0.0543*** | 0.0720**** | 0.0576**** |
| ADJ R-SQ | 0.0024 | 0.0858 | 0.0071 | 0.0093 | 0.0731 | 0.0698 | 0.2827 | 0.1209 | 0.2828 | 0.2107 |
| NO./CASES | 2516 | 4802 | 4671 | 4868 | 5198 | 5529 | 5569 | 5138 | 5526 | 5595 |

NOTE: Unstandardized coefficients appear in the first row of each pair, and standardized coefficients appear in the second.
*p ≤ .05 ** p ≤ .01 *** p ≤ .001 **** p ≤ .0001

## TABLE 6

## EFFECT ESTIMATES OF IN-SCHOOL VARIABLES ON TEN POST-HIGH SCHOOL OUTCOMES; SOPHOMORE COHORT

| Independent Variables | Dependent Variables | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CTRNREJ3 | CHOURSJ3 | JSATJOB3 | JSATINDX | WEEKS3 | MUNEMPL3 | EDASP3 | OCCASP3 | COLTIM3 | ENRLCOL3 |
| CONCPT1 | 0.9727E-02<br>0.0223 | -0.4727<br>-0.0188 | 0.5656E-01<br>0.0457** | 0.5871E-01<br>0.0619**** | -0.3014<br>-0.0056 | 0.2172E-01<br>0.0031 | -0.1551E-01<br>-0.0038 | 0.5091<br>0.0137 | -0.7749E-02<br>-0.0069 | -0.1053E-01<br>-0.0124 |
| LOCUS1 | 0.1961E-02<br>0.0042 | -0.1256<br>-0.0046 | 0.1289E-01<br>0.0096 | 0.1632E-01<br>0.0159 | 2.054<br>0.0351* | -0.3600<br>-0.0483** | 0.1020<br>0.0235* | 0.5791<br>0.0146 | 0.2700E-01<br>0.0226 | 0.1820E-01<br>0.0200 |
| EDASP1 | -0.2247E-02<br>-0.0203 | -0.3497<br>-0.0545** | -0.2367E-02<br>-0.0075 | -0.2774E-02<br>-0.0115 | -0.4117<br>-0.0294 | -0.3789E-01<br>-0.0212 | 0.1956<br>0.1887**** | 0.5245<br>0.0555*** | 0.3892E-01<br>0.1368**** | 0.2709E-01<br>0.1246**** |
| OCCASP1M | -0.1233E-03<br>-0.0100 | -0.1759E-01<br>-0.0247 | -0.6579E-03<br>-0.0169 | -0.4228E-03<br>-0.0158 | -0.6052E-01<br>-0.0391** | -0.3491E-02<br>-0.0176 | 0.9351E-02<br>0.0809**** | 0.1682<br>0.1609**** | 0.1247E-02<br>0.0392*** | 0.9652E-03<br>0.0398** |
| COLABL1 | 0.9532E-02<br>0.0363 | -0.1870<br>-0.0123 | 0.1659E-01<br>0.0220 | 0.3103E-02<br>0.0054 | 0.7474<br>0.0225 | -0.9815E-01<br>-0.0232 | 0.2326<br>0.0952**** | 0.8303<br>0.0366* | 0.5506E-01<br>0.0821**** | 0.2966E-01<br>0.0580**** |
| HOMWRK1 | 0.2210E-02<br>0.0294 | -0.1124<br>-0.0259 | 0.2892E-02<br>0.0137 | 0.1271E-02<br>0.0078 | -0.3137<br>-0.0337* | 0.1303E-01<br>0.0109 | 0.6258E-01<br>0.0898**** | 0.6643E-01<br>0.0105 | 0.1231E-01<br>0.0641**** | 0.1054E-01<br>0.0721**** |
| AVGRAD1 | -0.1781E-02<br>-0.0055 | -0.7439<br>-0.0401* | 0.1493E-02<br>0.0016 | 0.1215E-01<br>0.0175 | 0.1119<br>0.0028 | -0.3847<br>-0.0757**** | 0.3495<br>0.1182**** | 1.877<br>0.0698**** | 0.1032<br>0.1271**** | 0.6536E-01<br>0.1056**** |
| VERBAL1M | -0.2985E-03<br>-0.0099 | -0.7808E-01<br>-0.0451 | -0.3201E-02<br>-0.0377 | -0.2141E-02<br>-0.0329 | 0.3086E-01<br>0.0083 | -0.4977E-02<br>-0.0105 | 0.2575E-01<br>0.0935**** | 0.2666<br>0.1059**** | 0.2745E-02<br>0.0362 | 0.2096E-02<br>0.0383 |
| MATHSD1M | -0.8608E-04<br>-0.0030 | -0.7922E-01<br>-0.0483* | 0.2439E-02<br>0.0304 | 0.1114E-03<br>0.0018 | 0.5368E-01<br>0.0152 | 0.2729E-02<br>0.0060 | 0.1591E-01<br>0.0602**** | 0.4125E-01<br>0.0171 | 0.7359E-02<br>0.1012**** | 0.5726E-02<br>0.1033**** |
| SHDEPRT1 | 0.3978E-02<br>0.0537* | 0.1157<br>0.0279 | -0.5002E-02<br>-0.0243 | -0.2981E-02<br>-0.0192 | -0.7129<br>-0.0797**** | 0.4254E-01<br>0.0378* | -0.1869E-01<br>-0.0287* | -0.1163<br>-0.0194 | -0.1485E-01<br>-0.0826**** | -0.7826E-02<br>-0.0573**** |
| WAGE1 | 0.4153E-02<br>0.0224 | 0.2051<br>0.0187 | 0.1095E-01<br>0.0204 | 0.6145E-02<br>0.0149 | 0.7469<br>0.0318* | -0.1215<br>-0.0403** | 0.8034E-02<br>0.0046 | 0.4087<br>0.0257 | 0.1158E-02<br>0.0024 | -0.5662E-03<br>-0.0015 |
| HRSWRK1 | -0.3551E-03<br>-0.0162 | 0.4598E-01<br>0.0366* | 0.5152E-03<br>0.0064 | -0.5178E-03<br>-0.0109 | -0.6988E-01<br>-0.0256 | 0.4454E-02<br>0.0128 | -0.4757E-02<br>-0.0235 | 0.2355E-01<br>0.0128 | -0.1991E-02<br>-0.0358* | -0.1051E-02<br>-0.0248 |
| ANNHRS1 | 0.1754E-04<br>0.0311 | 0.1036E-02<br>0.0324 | 0.1358E-04<br>0.0086 | 0.5208E-04<br>0.0430* | 0.5397E-02<br>0.0771**** | -0.3185E-03<br>-0.0354* | 0.1302E-04<br>0.0025 | -0.1036E-02<br>-0.0220 | -0.1705E-04<br>-0.0119 | -0.2999E-04<br>-0.0275 |
| ADJ R-SQ | 0.0009 | 0.1157 | 0.0157 | 0.0201 | 0.0893 | 0.0855 | 0.4635 | 0.1903 | 0.3919 | 0.3204 |
| NO./CASES | 2516 | 4802 | 4671 | 4868 | 5198 | 5529 | 5569 | 5138 | 5526 | 5595 |

NOTE: Unstandardized coefficients appear in the first row of each pair, and standardized coefficients appear in the second.
*p ≤ .05 ** p ≤ .01 *** p ≤ .001 **** p ≤ .0001

expectation, perceived college ability, homework, grades, and math test score--but neither is affected directly by verbal test score. This does not mean there is no total effect, however. The potential importance of high school guidance and counseling is evident in these results. If guidance programs can be effective in helping youth set career goals, they clearly have strong potential for contributing to the well being of individuals and their general social welfare. Yet, evidence showing that guidance programs do not have strong effects on the high school attitudinal variables that influence postsecondary education has just been reviewed. Thus, there may be a strong need to establish effective standards for high school guidance programs.

There are no strong effects on the three labor market variables (CHOURSJ3, WEEKS3, and MUNEMPL3). High educational and occupational expectations reduce hours, though the latter effect is not quite statistically significant. The same pattern is evident on weeks worked, but the statistical significance is reversed. Misbehavior in school reduces weeks worked and raises unemployment, but it has no effect on hours worked in the current job. The set of variables describing work experience as a sophomore in high school exhibit small to no effects on current hours, but they show fairly consistent effects on weeks worked and unemployment, the signs of all significant coefficients being in the expected direction. Again, a potentially important avenue of operation for guidance and counseling programs is revealed. It may well be that guidance programs should incorporate explicit goals and activities designed to help youth assess questions related to working while attending high school. Important questions to consider include whether to work at all, how many hours to work given that one does work, and the type of job that would contribute best to the youth's development. At present these potentially important issues are settled haphazardly and are subject to uncertainties of the labor market. (see Greenberger and Steinberg 1986).

Job satisfaction and training-related placement are not affected by any of these variables. Their R-squares remain almost zero even after adding the large number of endogenous variables used to calculate the results in table 6.

The estimates of effects of the guidance program variables are displayed in table 7. As before, all these estimates were calculated under control for the full set of exogenous variables and lagged dependent (endogenous) variables. Few of these coefficients are statistically significant, and all are small. But there are some interesting results. First, having attended a school with a guidance plan improves the chance of finding a job related to one's training (CTRNREJ3). This is one of only 2 statistically significant coefficients in the equation for the training-related variable. It must be emphasized that the R-square is extremely small, and this result therefore might not replicate in another sample. Because of the importance of training-related placement to the success of vocational education

## TABLE 7

### EFFECT ESTIMATES OF GUIDANCE PROGRAM VARIABLES ON TEN POST-HIGH SCHOOL OUTCOMES: SOPHOMORE COHORT

| Independent Variables | Dependent Variables | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CTRNREJ3 | CHOURSJ3 | JSATJOB3 | JSATINDX | WEEKS3 | MUNEMPL3 | EDASP3 | OCCASP3 | COLTIM3 | ENRLCOL3 |
| WKPREPSG | -0.4872E-02<br>-0.0178 | -0.4190E-02<br>-0.0003 | -0.1204E-01<br>-0.0155 | -0.4341E-02<br>-0.0073 | -0.1366<br>-0.0040 | 0.8668E-01<br>0.0198 | -0.2052E-01<br>-0.0081 | -0.9212<br>-0.0395** | -0.2111E-01<br>-0.0302* | -0.5995E-02<br>-0.0112 |
| GROWTHSG | -0.6147E-02<br>-0.0272 | -0.6434E-01<br>-0.0049 | 0.5619E-03<br>0.0009 | -0.8428E-02<br>-0.0171 | -0.9752<br>-0.0346 | 0.2795E-01<br>0.0077 | 0.3180E-01<br>0.0151 | -0.5059E-01<br>-0.0026 | -0.1009E-02<br>-0.0017 | 0.2083E-02<br>0.0047 |
| PSTSECSG | -0.6966E-02<br>-0.0252 | 0.1482<br>0.0092 | 0.3420E-01<br>0.0434* | 0.1413E-01<br>0.0234 | -0.3615<br>-0.0104 | -0.3535E-01<br>-0.0080 | 0.1406E-01<br>0.0055 | -0.3126<br>-0.0132 | 0.1735E-01<br>0.0244 | 0.1135E-01<br>0.0210 |
| PCTCONSG | -0.9941E-03<br>-0.0381 | 0.2500E-01<br>0.0163 | 0.1067E-02<br>0.0142 | 0.7882E-03<br>0.0137 | 0.9950E-01<br>0.0301* | -0.4165E-02<br>-0.0098 | 0.3805E-02<br>0.0153 | 0.7063E-02<br>0.0031 | 0.9675E-03<br>0.0142 | 0.5517E-03<br>0.0106 |
| COUNSSTU | -1.145<br>-0.0197 | 56.68<br>0.0177 | 0.7539E-01<br>0.0005 | 2.289<br>0.0188 | 35.61<br>0.0048 | 1.448<br>0.0016 | 5.115<br>0.0085 | 24.75<br>0.0052 | -1.365<br>-0.0093 | -0.7234<br>-0.0064 |
| OCCINFO_ | -0.2162E-04<br>-0.0140 | 0.2494E-02<br>0.0269 | 0.1012E-03<br>0.0223 | 0.3088E-04<br>0.0089 | -0.1033E-02<br>-0.0051 | 0.8345E-03<br>0.0323* | -0.5308E-03<br>-0.0354** | -0.9463E-03<br>-0.0069 | -0.1919E-03<br>-0.0465**** | -0.8867E-04<br>-0.0282* |
| COUNSEL_ | 0.1258E-04<br>0.0223 | -0.4399E-03<br>-0.0132 | -0.1403E-04<br>-0.0086 | -0.1300E-04<br>-0.0104 | -0.1916E-03<br>-0.0027 | -0.1580E-03<br>-0.0171 | 0.1834E-03<br>0.0340** | 0.1575E-02<br>0.0320* | 0.3584E-04<br>0.0242* | 0.2853E-04<br>0.0253* |
| PSTOURS_ | -0.7039E-05<br>-0.0065 | -0.1700E-03<br>-0.0025 | 0.9777E-04<br>0.0292 | 0.4234E-04<br>0.0164 | -0.1648E-02<br>-0.0111 | -0.1783E-04<br>-0.0009 | 0.3796E-04<br>0.0034 | -0.6071E-03<br>-0.0060 | 0.2482E-04<br>0.0081 | -0.4468E-05<br>-0.0019 |
| GDPLANSG | 0.2365E-01<br>0.0455* | -0.9093E-01<br>-0.0030 | -0.4499E-03<br>-0.0003 | 0.5591E-02<br>0.0050 | -0.3077<br>-0.0048 | -0.5568E-01<br>-0.0067 | -0.7546E-01<br>-0.0156 | 0.4495<br>0.0102 | -0.3977E-02<br>-0.0030 | -0.8635E-03<br>-0.0007 |
| COUTIMNG | -0.3174E-03<br>-0.0360 | -0.8105E-03<br>-0.0016 | 0.2944E-03<br>0.0115 | 0.3071E-03<br>0.0156 | 0.8213E-03<br>0.0007 | -0.3207E-02<br>-0.0224 | 0.1423E-02<br>0.0170 | 0.1595E-01<br>0.0210 | 0.3920E-03<br>0.0170 | 0.1755E-03<br>0.0100 |
| COUTIMGI | -0.1684E-04<br>-0.0039 | -0.1743E-02<br>-0.0068 | 0.5954E-04<br>0.0047 | -0.1209E-03<br>-0.0126 | -0.1005E-01<br>-0.0185 | 0.1981E-02<br>0.0283 | -0.2505E-03<br>-0.0062 | -0.5124E-02<br>-0.0138 | 0.1951E-04<br>0.0017 | -0.8965E-04<br>-0.0105 |
| COUNATT | -0.6961E-03<br>-0.0023 | -0.1302<br>-0.0073 | 0.2196E-01<br>0.0254 | 0.1346E-01<br>0.0203 | -0.6115<br>-0.0160 | -0.1174E-02<br>-0.0002 | 0.8262E-01<br>0.0290** | 0.4728<br>0.0182 | 0.3844E-01<br>0.0489**** | 0.2388E-01<br>0.0399*** |
| ADJ R-SQ | 0.0009 | 0.1157 | 0.0157 | 0.0201 | 0.0893 | 0.0855 | 0.4635 | 0.1903 | 0.3919 | 0.3204 |
| NO./CASES | 2516 | 4802 | 4871 | 4868 | 5198 | 5529 | 5569 | 5138 | 5526 | 5595 |

NOTE: Unstandardized coefficients appear in the first row of each pair, and standardized coefficients appear in the second.
*p ≤ .05 ** p ≤ .01 *** p ≤ .001 **** p ≤ .0001

students and the potential contribution of guidance programs in this regard, this issue merits further attention. Two critical questions are at stake. Will the result replicate, and, if so, what features of a guidance program based on a written plan are important?

The other interesting results in table 7 relate to the pattern of effects involving student exposure to occupational information (OCCINFO), student exposure to counseling (COUNSEL), and the index of counselor attitudes (COUNATT). Emphasis on occupational information reduces educational expectation 2 years after leaving high school (EDASP3), reduces the amount of time spent in college (COLTIM3) and reduces the chance of being enrolled in college at the time of the second follow-up (ENRLCOL3). Attending a school that emphasizes counseling and one where counselors have a favorable attitude toward the school raises educational plans and achievement. In view of the deflating effect of occupational information on educational outcomes, it is ironic that occupational information also increases unemployment. It seems doubtful that occupational information per se has these effects. There must be some other unmeasured feature of schools that emphasize occupational information that accounts for these estimates. Establishing informed guidance policy implies a need to pursue this question further.

## Interaction Models

A review of guidance theory led to predictions of specific statistical interaction. Details are given in chapter 2. In brief review, the idea is that effective guidance helps youth to adopt realistic career goals; hence, youth attending schools with strong guidance programs should show closer connections among variables such as educational and occupational goals, tests, grades, and perceived college ability. Hotchkiss and Dorsten (1985) reported preliminary evidence on this issue; they found none of the predected interactions. Here the index describing the guidance program is revised and the result extended to post-high school outcomes. This revised index was defined as the program variables used in the prior analyses that could be construed as likely to have a positive or negative effect on program quality. Those with expected negative impact were reflected; all components were standardized to zero mean and unit variance before calculating the index value.[6]

In-school outcomes. For these analyses the list of outcome variables was modified somewhat. All test scores (verbal, math, science, and civics) were combined into one test (TESTS1, TESTS2---time 1 and time 2, respectively) and the deportment variable was omitted. The tests were combined into 1 variable to conserve degrees of freedom and reduce colinearity that often arises in connection with interaction models. The results are presented in table 8. The table also displays coefficients on the guidance index (GDINDX) calculated from a linear specification, for comparative purposes. It is interesting in this regard to note that the index has a slight positive impact on educational and occupational plans and on perceived college ability as shown in table 8.

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[6] The items used were COUNSSTU, OCCINFO_, COUNSEL_, PSTOURS_, GPPLANSG, COUTIMGI, -COUTIMNG, COUNATT. The counselor time in nonguidance activities was reflected, as indicated by the negative sign preceding it.

Again, none of the coefficients associated with the interaction terms (GD_TESTS, GD_SES, GD_ED, GD_OCC, and GD_COLAB) are large, but a few are statistically significant. This finding contrasts with those of Hotchkiss and Dorsten (1985) who report no statistically significant effects using the same data. The primary difference between their analyses and the current results is in the definition of the guidance program variables. They used two indexes, both composed solely of rough estimates of student exposure to various guidance activities. One of the indexes measured the "central technology" of guidance (counseling and career information in classes), and the other measured all the rest (e.g., career days, assemblies, postsecondary tours).

One of the interactions strongly predicted by theory is statistically significant and in the predicted direction (GD_OCC on EDASP2). Schools with guidance programs scoring high on the guidance index (GDINDX) produce students whose educational goals (EDASP2) are more highly dependent on occupational goals (OCCASP1M) than students in other schools. On the other hand, strong guidance programs (as indicated by GDINDX) tend to reduce the influence of test scores on perceived college ability. This result is difficult to explain. Presumably, it is desirable to base judgments on objective evidence, though there is much room for discussion and debate here. Schools scoring high on the index also tend to reduce the dependencies of the test score on educational expectation. Such schools also tend to reduce the stability of perceived college ability. None of these results are strongly indicated by theory, but none of them are contradicted by it either. (If the effect of test score on educational expectation had been reduced by the guidance program [GDINDX], the theory would be contradicted, but the effect is in the opposite direction--from educational expectation to test score).

In at least two of these cases, these results seem desirable. It probably is useful to have all students, not just the college bound students, do lots of homework and do well on the tests. It may also be helpful to many students not to fix too early their perceptions about ability to complete college.

Post-high school outcomes. Estimates of the interaction models for post-high school outcomes are displayed in table 9. The dependent variables in this analysis are limited to educa-

## TABLE 8

## LINEAR AND INTERACTION EFFECTS FOR FOUR-IN-SCHOOL OUTCOMES: SOPHOMORE COHORT

### Linear Coefficients Associated with the Index of Guidance Program Quality (GDINDX)

| Independent Variables | Dependent Variables<br>EDASP2 | OCCASP2 | COLABL2 | TESTS2 |
|---|---|---|---|---|
| | .1457 | 1.095 | .4187E-01 | .9704E-01 |
| GDINDX | .0244** | .0204* | .0193* | .0046 |

### Interaction Effects

| Independent Variables | Dependent Variables<br>EDASP2 | OCCASP2 | COLABL2 | TESTS2 |
|---|---|---|---|---|
| EDASP1 | 0.3141 | 0.8048 | 0.1296E-01 | 0.1251 |
| | 0.2842**** | 0.0812**** | 0.0317** | 0.0321**** |
| OCCASP1M | 0.9066E-02 | 0.2411 | 0.1816E-02 | 0.6377E-02 |
| | 0.0739**** | 0.2215**** | 0.0405**** | 0.0148** |
| COLABL1 | 0.2527 | 1.345 | 0.2922 | 0.2784 |
| | 0.0995**** | 0.0581**** | 0.3066**** | 0.0313**** |
| TESTS1 | 0.5843E-01 | 0.2824 | 0.1907E-01 | 0.7601 |
| | 0.1915**** | 0.1033**** | 0.1684**** | 0.7106**** |
| GDINDX | 0.8091 | 9.309 | 0.4901 | -0.2265 |
| | 0.1355* | 0.1735* | 0.2263*** | -0.0108 |
| GD_TESTS | -0.1033E-01 | -0.1379 | -0.6554E-02 | 0.1588E-01 |
| | -0.0889 | -0.1322 | -0.1572* | 0.0388 |
| GD_SES | 0.7806E-02 | 0.2864 | 0.3788E-01 | -0.2933E-01 |
| | 0.0008 | 0.0032 | 0.0104 | -0.0008 |
| GD_ED | -0.9351E-02 | -0.2962E-01 | 0.2386E-02 | -0.4152E-01 |
| | -0.0209 | -0.0074 | 0.0148 | -0.0262* |
| GD_OCC | 0.3871E-02 | 0.2392E-01 | 0.1257E-03 | 0.3496E-02 |
| | 0.0336* | 0.0233 | 0.0030 | 0.0086 |
| GD_COLAB | -0.5281E-01 | -0.5061 | -0.3752E-01 | -0.4292E-01 |
| | -0.0360 | -0.0385 | -0.0710* | -0.0083 |
| ADJ R-SQ | 0.4722 | 0.2117 | 0.3491 | 0.7566 |
| NO./CASES | 8948 | 8955 | 8331 | 9254 |

NOTE: Unstandardized coefficients appear in the first row of each pair, and standardized coefficients appear in the second.

*p $\leq$ .05 ** p $\leq$ .01 *** p $\leq$ .001 **** p $\leq$ .0001

## TABLE 9

## LINEAR AND INTERACTION EFFECTS FOR FOUR POST-HIGH SCHOOL OUTCOMES: SOPHOMORE COHORT

### Linear Coefficients Associated with the Index of Guidance Program Quality (GDINDX)

| | Dependent Variables | | | |
|---|---|---|---|---|
| Independent Variables | EDASP3 | OCCASP3 | ENROLCOL3 | COLTIM3 |
| GDINDX | .8660E-01 | 1.090 | .1695E-01 | .2191E-01 |
| | .0151 | .0207 | .0140 | .0138 |

### Interaction Effects

| Independent Variables | Dependent Variables | | | |
|---|---|---|---|---|
| | EDASP3 | OCCASP3 | ENROLCOL3 | COLTIM3 |
| EDASP1 | 0.2084 | 0.5001 | 0.2881E-01 | 0.4244E-01 |
| | 0.2026**** | 0.0530** | 0.1323**** | 0.1493**** |
| OCCASP1M | 0.9394E-02 | 0.1705 | 0.9333E-03 | 0.1227E-02 |
| | 0.0822**** | 0.1640**** | 0.0386** | 0.0388** |
| COLABL1 | 0.2469 | 1.029 | 0.2748E-01 | 0.5387E-01 |
| | 0.1013**** | 0.0452** | 0.0533*** | 0.0799**** |
| TESTS1 | 0.6058E-01 | 0.3016 | 0.1065E-01 | 0.1354E-01 |
| | 0.2066**** | 0.1119**** | 0.1718**** | 0.1666**** |
| GDINDX | 0.2958 | 0.7430E-01 | 0.1104E-01 | -0.4595E-01 |
| | 0.0517 | 0.0014 | 0.0091 | -0.0290 |
| GD_TESTS | -0.4424E-02 | 0.9359E-02 | -0.1165E-03 | 0.1370E-02 |
| | -0.0397 | 0.0092 | -0.0049 | 0.0444 |
| GD_SES | -0.7487E-01 | 0.2814 | -0.3224E-01 | -0.5458E-01 |
| | -0.0079 | 0.0033 | -0.0161 | -0.0208 |
| GD_ED | -0.1526E-01 | 0.7620E-01 | -0.4070E-02 | -0.4188E-02 |
| | -0.0355 | 0.0194 | -0.0447 | -0.0351 |
| GD_OCC | -0.1679E-02 | 0.3436E-01 | 0.4483E-03 | -0.5074E-04 |
| | -0.0154 | 0.0344 | 0.0194 | -0.0017 |
| GD_COLAB | 0.6742E-01 | -0.4812 | 0.9521E-02 | 0.1206E-01 |
| | 0.0479 | -0.0374 | 0.0319 | 0.0309 |
| ADJ R-SQ | 0.4576 | 0.1864 | 0.2990 | 0.3616 |
| NO./CASES | 5234 | 4839 | 5259 | 5193 |

NOTE: Unstandardized coefficients appear in the first row of each pair, and standardized coefficients appear in the second.
*p ≤ .05 ** p ≤ .01 *** p ≤ .001 **** p ≤ .0001

tional and occupational expectation, time spent in college, and current enrollment in college. The logic of the interaction hypothesis extends to these variables better than to the others.

The results are easy to summarize. Not one coefficient out of 20 associated with product interaction variables is statistically significant. These findings tend to undermine the rather weak and inconsistent results for the in-school outcomes.

## Results for Seniors

The set of outcome variables for the senior cohort was similar to that used in the analysis of the sophomore cohort data. Current or ending wage on the most recent job was added to the outcomes (CEWAGEJ3). The R-square for the full model for wage is still low, but high enough to permit analysis. The job satisfaction variables are omitted from the analyses of senior data because the follow-up senior questionnaires contain no good indicators of job satisfaction. Finally, the job training variable (EMPLOJT3) was added to the list of outcomes. Except for these differences, the set of outcomes used with seniors matches that used for the sophomore cohort. The weeks-worked variable (TOTWKS) was defined by adding weeks worked during the first follow-up period to weeks worked during the second follow-up period. Time enrolled in college (TOTCTIM3) was similarly defined. These minor differences in measurement procedures between the sophomore and senior cohort are due to the fact that members of the sophomore cohort had been out of school only 2 years at the time of the second follow-up; whereas, members of the senior cohort had been out 4 years.

Table 10 reports estimates of total effects of all the background variables on the 10 outcomes used for seniors. Again, no effects are observed on the training-related job variable (CTRNREJ3)--the R-square is essentially zero. Being female and from a high SES home reduce hours worked per week, as for sophomores, but high parental income tends to increase hours, after controlling for the other status variables. Being female also reduces on-the-job training (EMPLOJT3), reduces weeks worked (TOTWKS), and raises occupational expectation (OCCASP3)--all in agreement with sophomore results. The SES index also continues to show strong positive effects on post high school education (EDASP3) and occupational expectations (OCCASP3), time spent in college (TOTCTIM3), and current enrollment in college (ENRLCOL3), as with sophomores. Effects of parental income also are consistent with effects for sophomores. Also, blacks work fewer hours (CHOURSJ3), earn a lower wage (CEWAGEJ3), work fewer weeks (TOTWKS)--15.9 less out of 42, and are unemployed (MUNEMPL3) for more months. All these results are consistent with sophomore findings. However, being black is not associated with less likelihood of attending college or time spent in college for seniors. The OJT variable is associated with a low, but statistically significant, R-square (.0185). Being female reduces

## TABLE 10

### EFFECT ESTIMATES OF BACKGROUND VARIABLES ON TEN POST-HIGH SCHOOL OUTCOMES: SENIOR COHORT

| Independent Variables | Dependent Variables | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CTRNREJ3 | CHOURSJ3 | CEWAGEJ3 | EMPLOJT3 | TOTWKS | MUNEMPL3 | EDASP3 | OCCASP3 | TOTCTIM3 | ENRLCOL3 |
| SEXCMP2 | -0.1464E-01 | -5.717 | -0.4442 | -88.94 | -9.938 | 0.1624 | -0.1037 | 7.824 | 0.1090 | 0.1422E-01 |
| | -0.0374 | -0.1991**** | -0.0514** | -0.1197**** | -0.0981**** | 0.0217 | -0.0230 | 0.1852**** | 0.0429** | 0.0146 |
| BLACKCMP | -0.8095E-03 | -1.773 | -0.5151 | -4.480 | -15.93 | 1.199 | 0.3664 | 0.8589 | -0.3725E-01 | 0.3493E-02 |
| | -0.0017 | -0.0506** | -0.0482* | -0.0048 | -0.1333**** | 0.1360**** | 0.0689**** | 0.0173 | -0.0125 | 0.0031 |
| HISPNIC1 | -0.2013E-02 | -0.4165 | 0.2218 | -3.284 | -3.704 | 0.1810 | -0.1001 | 0.5974E-02 | -0.8784E-01 | -0.4492E-01 |
| | -0.0042 | -0.0115 | 0.0204 | -0.0036 | -0.0293 | 0.0194 | -0.0178 | 0.0001 | -0.0277 | -0.0371* |
| ASIAN | -0.7715E-03 | -2.253 | -0.9346E-01 | 105.2 | -19.39 | 0.1266 | 0.8600 | 3.054 | 0.3975 | 0.1639 |
| | -0.0006 | -0.0256 | -0.0035 | 0.0383 | -0.0620**** | 0.0055 | 0.0620**** | 0.0234 | 0.0505*** | 0.0547*** |
| OTHERNW | -0.1395E-01 | -0.8670 | -0.3558 | 16.49 | -15.41 | 0.8161 | 0.5909E-01 | -5.153 | -0.2471 | -0.9185E-01 |
| | -0.0090 | -0.0082 | -0.0108 | 0.0064 | -0.0419** | 0.0302* | 0.0036 | -0.0335* | -0.0265 | -0.0260 |
| SESNIN1M | -0.2022E-02 | -3.391 | 0.1915 | 5.968 | -7.915 | -0.2000 | 1.207 | 6.401 | 0.5870 | 0.1845 |
| | -0.0063 | -0.1428**** | 0.0268 | 0.0093 | -0.0958**** | -0.0328 | 0.3282**** | 0.1854**** | 0.2833**** | 0.2328**** |
| MHOMAKR1 | -0.6231E-02 | 0.7758 | -0.1059E-02 | 14.94 | -4.451 | 0.2215 | -0.1190 | -0.3830 | -0.8132E-01 | -0.1640E-01 |
| | -0.0107 | 0.0180 | -0.0001 | 0.0133 | -0.0295* | 0.0199 | -0.0178 | -0.0060 | -0.0216 | -0.0114 |
| MOTHER1 | -0.2373E-01 | -0.7114 | -0.4470 | -23.64 | 0.6880 | 0.1352 | 0.4311 | 4.074 | 0.3007 | 0.7133E-01 |
| | -0.0378 | -0.0148 | -0.0309 | -0.0193 | 0.0041 | 0.0109 | 0.0579*** | 0.0578*** | 0.0717**** | 0.0444** |
| FATHER1 | 0.6487E-02 | 0.7206 | 0.4143 | 17.93 | 9.517 | -0.1014 | -0.2811 | -2.246 | -0.3372E-01 | -0.5810E-02 |
| | 0.0146 | 0.0222 | 0.0425* | 0.0216 | 0.0842**** | -0.0122 | -0.0560*** | -0.0477** | -0.0119 | -0.0054 |
| OTMGRD1 | -0.9098E-02 | 0.9301 | 0.3256E-01 | 106.7 | 5.254 | 0.3582 | -0.1595 | -2.458 | -0.1391 | -0.9445E-01 |
| | -0.0116 | 0.0169 | 0.0020 | 0.0773*** | 0.0272 | 0.0253 | -0.0186 | -0.0304 | -0.0287 | -0.0510*** |
| OTFGRD1 | 0.6734E-02 | -0.3339 | 0.6560 | -32.11 | 1.498 | 0.1034 | 0.4513E-01 | -0.4845 | -0.1646 | -0.2160E-01 |
| | 0.0068 | -0.0044 | 0.0294 | -0.0164 | 0.0058 | 0.0054 | 0.0039 | -0.0045 | -0.0255 | -0.0087 |
| LFMINC1M | 0.5451E-02 | 0.9775 | -0.2221E-01 | -30.88 | 1.089 | -0.4892 | 0.3032 | 1.690 | 0.9930E-01 | 0.5203E-01 |
| | 0.0161 | 0.0391* | -0.0029 | -0.0471* | 0.0126 | -0.0769**** | 0.0788**** | 0.0470* | 0.0459** | 0.0629*** |
| ADJ R-SQ | 0.0013 | 0.0562 | 0.0137 | 0.0185 | 0.0439 | 0.0463 | 0.1594 | 0.0819 | 0.1356 | 0.1039 |
| NO./CASES | 2105 | 3898 | 3073 | 2628 | 4374 | 4339 | 4381 | 4036 | 4373 | 4402 |

NOTE: Unstandardized coefficients appear in the first row of each pair, and standardized coefficients appear in the second.
*p ≤ .05 ** p ≤ .01 *** p ≤ .001 **** p ≤ .0001

OJT; having a male guardian in the home during high school increases it.

Effect estimates associated with the lagged endogenous variables are shown in table 11[7]. The consistency in behavior for educational and occupational plans is evident from comparing coefficients in table 11 to their analogous values in table 7. Both educational and occupational expectations measured in high school exhibit positive effects on educational and occupational expectations after high school, negative effects on weeks worked, and positive effects on college-going behavior (both enrollment and time spent in college). Educational expectation also has a negative effect on months unemployed. In all cases, the feedback effect of level of occupational expectation on educational expectation at a later date is stronger than the effect of educational expectation or occupational expectation. These results reinforce earlier comments regarding the potential importance of guidance and counseling in working with career planning of youth while they remain in school. This may seem like a trivial point, but many cherished beliefs do not hold up under scrutiny; beliefs about the importance of career plans do hold up. The findings here have been replicated numerous times (see Campbell et al. [1983] for a review).

Perceived college ability (COLABL) also has proved to be a consistent performer in these analyses. It positively affects educational and occupational expectations after high school, time spent in college, and current enrollment. All these effects occur for both sophomores and seniors and the coefficients are of comparable magnitude in comparisons between samples. The results with respect to perceived college ability are striking in view of the fact that the variable is defined by a single item and has not been used much in past research on status attainment and stratification. It should be a prime candidate for inclusion in future research. Further, it offers strong potential as a point of intervention for guidance programs. The interaction analyses revealed that "strong" guidance programs tend to decrease the stability of perceived college ability and reduce its dependence on test scores. This finding (if replicated) may provide important context in this regard, but the implications of these results are not clear.

In view of the absence of any effects on training-related placement in the current job (CTRNREJ3) in the sophomore data and the reduced-form for seniors, it is interesting to note a significant positive effect of lagged locus of control (LOCUS1) on obtaining a training related job. Anomalously, verbal test score has a negative effect. No other statistically significant

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[7] The lagged endogenous variables necessarily were measured during the senior year. This procedure is not as satisfactory as for sophomores, since guidance programs may influence the senior measures. Ideally the lagged endogenous variables would be measured on entry to high school.

## TABLE 11

### EFFECT ESTIMATES OF IN-SCHOOL VARIABLES ON TEN POST-HIGH SCHOOL OUTCOMES: SENIOR COHORT

| Independent Variables | Dependent Variables | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CTRNREJ3 | CHOURSJ3 | CEWAGEJ3 | EMPLOJT3 | TOTWKS | MUNEMPL3 | EDASP3 | OCCASP3 | TOTCTIM3 | ENRLCOL3 |
| CONCPT1 | -0.1337E-01<br>-0.0406 | 0.1323<br>0.0054 | 0.1451<br>0.0199 | 9.187<br>0.0143 | -1.912<br>-0.0224 | -0.1804<br>-0.0286 | -0.3628E-01<br>-0.0095 | 0.1312<br>0.0037 | -0.5776E-01<br>-0.0270* | -0.2696E-01<br>-0.0329* |
| LOCUS1 | 0.2666E-01<br>0.0781** | 0.3829<br>0.0152 | -0.1428<br>-0.0189 | -6.062<br>-0.0092 | 2.156<br>0.0246 | -0.2507<br>-0.0388* | 0.1136<br>0.0291* | 1.068<br>0.0291 | 0.2457E-01<br>0.0112 | 0.1272E-01<br>0.0151 |
| EDASP1 | -0.2211E-02<br>-0.0245 | -0.3418<br>-0.0509** | -0.1328<br>-0.0659** | -1.928<br>-0.0108 | -2.246<br>-0.0956**** | 0.2679E-01<br>0.0155 | 0.2976<br>0.2847**** | 0.8326<br>0.0849**** | 0.1320<br>0.2244**** | 0.4284E-01<br>0.1902**** |
| OCCASP1M | -0.2399E-03<br>-0.0253 | -0.6523E-01<br>-0.0938**** | 0.5315E-02<br>0.0255 | -0.6934<br>-0.0395 | -0.1340<br>-0.0543*** | -0.2773E-02<br>-0.0153 | 0.1102E-01<br>0.1003**** | 0.2237<br>0.2182**** | 0.6606E-02<br>0.1070**** | 0.2126E-02<br>0.0898**** |
| COLABL1 | 0.6904E-02<br>0.0328 | -0.7515E-01<br>-0.0046 | 0.2172<br>0.0439* | -3.108<br>-0.0075 | 0.8291<br>0.0164 | 0.7204E-01<br>0.0172 | 0.2367<br>0.0944**** | 1.401<br>0.0586*** | 0.1567<br>0.1113**** | 0.3262E-01<br>0.0605**** |
| HOMWRK1 | 0.1121E-02<br>0.0186 | -0.1876<br>-0.0431* | -0.1240E-01<br>-0.0095 | 0.7230E-01<br>0.0006 | -0.2703<br>-0.0176 | 0.8255E-02<br>0.0073 | 0.7445E-01<br>0.1088**** | 0.1086<br>0.0171 | 0.2469E-01<br>0.0641**** | 0.1031E-01<br>0.0699**** |
| AVGRAD1 | 0.4210E-02<br>0.0149 | -1.714<br>-0.0829**** | 0.1446<br>0.0233 | -2.629<br>-0.0049 | 0.2641<br>0.0037 | -0.2482<br>-0.0466* | 0.3124<br>0.0970**** | 1.827<br>0.0607*** | 0.2489<br>0.1375**** | 0.6024E-01<br>0.0869**** |
| VERBAL1M | -0.1649E-02<br>-0.0710* | -0.1598E-01<br>-0.0095 | -0.1811E-01<br>-0.0358 | 1.550<br>0.0351 | 0.1479E-01<br>0.0025 | 0.2385E-02<br>0.0055 | 0.1935E-01<br>0.0743**** | 0.8051E-01<br>0.0328 | -0.1686E-02<br>-0.0115 | 0.8311E-03<br>0.0148 |
| MATHSD1M | 0.5558E-04<br>0.0026 | -0.5880E-01<br>-0.0379 | -0.3783E-02<br>-0.0080 | -0.9378<br>-0.0227 | -0.6982E-01<br>-0.0129 | -0.2078E-01<br>-0.0523* | 0.2238E-01<br>0.0930**** | 0.1580<br>0.0701** | 0.2025E-01<br>0.1496**** | 0.5457E-02<br>0.1054**** |
| SMDEPRT1 | 0.5398E-03<br>0.0093 | 0.1061<br>0.0256 | 0.2574E-01<br>0.0209 | 3.591<br>0.0347 | -0.5479<br>-0.0378* | 0.4012E-01<br>0.0374* | 0.1290E-03<br>0.0002 | -0.1769<br>-0.0290 | -0.2101E-01<br>-0.0577**** | -0.3879E-02<br>-0.0278 |
| WAGE1 | -0.6451E-02<br>-0.0358 | 0.2989<br>0.0223 | 0.5869<br>0.1457**** | -12.59<br>-0.0349 | 4.820<br>0.1053**** | -0.1814<br>-0.0537* | -0.1400E-01<br>-0.0069 | 0.2261<br>0.0118 | -0.8700E-02<br>-0.0076 | -0.5360E-02<br>-0.0122 |
| HRSWRK1 | 0.1174E-03<br>0.0072 | 0.4558E-01<br>0.0381* | 0.4795E-02<br>0.0133 | 0.2711<br>0.0086 | -0.3271E-01<br>-0.0078 | -0.2343E-02<br>-0.0076 | -0.2012E-02<br>-0.0108 | -0.3076E-01<br>-0.0177 | -0.4808E-02<br>-0.0460** | -0.1245E-02<br>-0.0311 |
| ANNHRS1 | -0.1207E-04<br>-0.0353 | 0.1168E-02<br>0.0468* | 0.1154E-03<br>0.0153 | 0.1923E-01<br>0.0304 | 0.1246E-01<br>0.1414**** | -0.3118E-03<br>-0.0479** | -0.7310E-04<br>-0.0186 | -0.2281E-03<br>-0.0062 | -0.5059E-04<br>-0.0229 | -0.1889E-05<br>-0.0022 |
| NVRWRK1 | 0.3109E-01<br>0.0343 | 0.6164<br>0.0089 | 3.319<br>0.1578**** | -24.01<br>-0.0127 | 12.43<br>0.0559** | -0.2404<br>-0.0146 | 0.3032E-01<br>0.0031 | 0.3809<br>0.0041 | -0.8977E-01<br>-0.0126 | 0.2149E-02<br>0.0010 |
| ADJ R-SQ | 0.0031 | 0.1033 | 0.0303 | 0.0178 | 0.0906 | 0.0598 | 0.4545 | 0.2056 | 0.4028 | 0.2586 |
| NO./CASES | 2105 | 3898 | 3073 | 2628 | 4374 | 4339 | 4381 | 4036 | 4373 | 4402 |

NOTE: Unstandardized coefficients appear in the first row of each pair, and standardized coefficients appear in the second.
*p ≤ .05 ** p ≤ .01 *** p ≤ .001 **** p ≤ .0001

effects are observed and the R-square is very small. Effects on OJT are similarly small, but it is noteworthy that occupational expectation in high school and time spent on homework both increase slightly the amount of OJT.

No strong effects on wage (CWAGEJ3) are observed; the strongest is wage at time 1 (positive) and the never-worked dummy variable (NVRWRK1); the latter effect is negative, but the variable serves as a missing data dummy for WAGE1, which was assigned a zero value if it were missing. The negative coefficient or NVRWRK1 therefore means that the effect of lagged wage on current wage is not linear if earning no money is defined as zero wage. Jumping from no wage to $3/hour has a stronger effect on current wage than changing from $3-6/dollars per hour. Use of log wage rather than dollars might change this result. Wage in high school also increases weeks worked (JOTWKS), as does the estimate of annual hours. The never-worked dummy again has a positive coefficient. Months unemployed are reduced by lagged wage and annual hours. Hours per week worked during high school reduces time in college since high school and the likelihood of current enrollment in college, though the latter coefficient is not statistically significant. The difficulty of untangling feedback effects between college attendance and working should be emphasized here.

The senior results regarding effects of working during high school replicate those for sophomores. This fact reinforces the need for guidance programs to consider work behavior of students as an important area for assisting youth to make informed judgments.

The strong effects of math test scores on college attendance and the absence of significant effects of verbal test found for sophomores is replicated here. Absence of effects for verbal tests was certainly not expected. Its implications bear further reflection. What are the consequences of selecting those students with math and technical achievements but not those with verbal achievements? Both tests affect educational expectation, and only the verbal test affects occupational expectation. What are the potential consequences of these discrepancies between expectations and achievement?

Although some scattered significant coefficients are associated with self-esteem and locus of control, the effects of these two variables generally are small. This generalization applies both to seniors and to in-school and post-school outcomes of sophomores. These findings suggest that guidance programs which focus on these two attitudinal variables may not be effective. As noted above, specific career planning variables and perceived college ability offer more potential than the general notion of self-esteem and locus of control.

Estimates of effects of the guidance program variables for seniors are shown in table 12. Few of these coefficients are

## TABLE 12

### EFFECT ESTIMATES OF GUIDANCE PROGRAM VARIABLES ON TEN POST-HIGH SCHOOL OUTCOMES: SENIOR COHORT

| Independent Variables | Dependent Variables | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CTRNREJ3 | CHOURSJ3 | CEWAGEJ3 | EMPLOJT3 | TOTWKS | MUNEMPL3 | EDASP3 | OCCASP3 | TOTCTIM3 | ENRLCOL3 |
| WKPREPSG | 0.4417E-02<br>0.0211 | 0.1767<br>0.0115 | -0.2125<br>-0.0460* | 1.877<br>0.0048 | 1.534<br>0.0283 | -0.9620E-01<br>-0.0241 | -0.5085E-01<br>-0.0211 | -0.1785<br>-0.0078 | -0.3568E-01<br>-0.0263 | -0.1147E-01<br>-0.0221 |
| GROWTHSG | -0.2404E-02<br>-0.0139 | 0.5965E-01<br>0.0047 | -0.1038E-01<br>-0.0027 | 3.493<br>0.0107 | 1.374<br>0.0310 | -0.1478<br>-0.0452* | -0.2274E-01<br>-0.0115 | -0.1586<br>-0.0086 | -0.1124E-01<br>-0.0101 | -0.6053E-02<br>-0.0142 |
| PSTSECSG | -0.2780E-02<br>-0.0140 | -0.1032<br>-0.0069 | -0.4261E-01<br>-0.0095 | 6.891<br>0.0179 | 1.192<br>0.0228 | -0.6416E-01<br>-0.0167 | 0.3886E-01<br>0.0167 | -0.2252<br>-0.0104 | 0.3323E-01<br>0.0254 | 0.5436E-02<br>0.0109 |
| PCTCONSG | 0.3241E-03<br>0.0160 | -0.2718E-01<br>-0.0184 | -0.1038E-02<br>-0.0023 | -0.1487<br>-0.0039 | -0.1169E-01<br>-0.0022 | -0.1125E-01<br>-0.0291 | 0.9779E-04<br>0.0004 | 0.1095E-01<br>0.0050 | 0.3164E-03<br>0.0024 | 0.3308E-03<br>0.0066 |
| COUNSSTU | -0.4557<br>-0.0099 | -30.69<br>-0.0089 | 16.18<br>0.0148 | -1929.<br>-0.0175 | -556.4<br>-0.0437** | -11.90<br>-0.0126 | 15.83<br>0.0277* | 20.77<br>0.0040 | 0.6151<br>0.0019 | 1.998<br>0.0163 |
| OCCINFO_ | -0.6363E-05<br>-0.0052 | -0.9411E-04<br>-0.0010 | 0.8501E-04<br>0.0031 | -0.6681E-01<br>-0.0289 | -0.4604E-02<br>-0.0145 | 0.3602E-03<br>0.0154 | -0.2405E-03<br>-0.0170 | -0.2466E-02<br>-0.0186 | -0.3975E-04<br>-0.0050 | -0.8377E-04<br>-0.0275 |
| COUNSEL_ | 0.5167E-05<br>0.0115 | -0.4200E-03<br>-0.0127 | -0.7740E-04<br>-0.0078 | 0.2934E-01<br>0.0343 | -0.3380E-03<br>-0.0029 | -0.3321E-04<br>-0.0039 | 0.1557E-03<br>0.0300* | 0.4644E-03<br>0.0096 | 0.2497E-04<br>0.0085 | 0.2853E-04<br>0.0255 |
| PSTOURS_ | 0.9108E-05<br>0.0086 | 0.1486E-02<br>0.0199 | -0.5680E-03<br>-0.0257 | -0.3613E-01<br>-0.0186 | -0.6133E-02<br>-0.0233 | 0.6496E-05<br>0.0003 | 0.5810E-04<br>0.0050 | -0.1311E-02<br>-0.0120 | 0.1389E-03<br>0.0211 | 0.6129E-04<br>0.0243 |
| COUTIMNG | 0.4028E-03<br>0.0572* | -0.3953E-02<br>-0.0077 | 0.1183E-02<br>0.0077 | 0.2103<br>0.0157 | -0.4519E-01<br>-0.0251 | 0.2607E-02<br>0.0198 | 0.1328E-02<br>0.0166 | 0.5001E-02<br>0.0065 | 0.3356E-03<br>0.0075 | 0.3217E-03<br>0.0187 |
| COUTIMGI | -0.8273E-04<br>-0.0244 | 0.6017E-02<br>0.0243 | -0.3007E-02<br>-0.0400* | 0.1857<br>0.0286 | -0.1082E-01<br>-0.0126 | 0.4756E-03<br>0.0075 | 0.4469E-03<br>0.0117 | -0.4587E-02<br>-0.0128 | 0.1514E-03<br>0.0070 | -0.1937E-04<br>-0.0024 |
| COUNATT | 0.4411E-02<br>0.0189 | -0.4859<br>-0.0282 | -0.1013<br>-0.0197 | -5.463<br>-0.0121 | -1.098<br>-0.0180 | -0.3862E-01<br>-0.0086 | 0.5529E-01<br>0.0203 | -0.2739<br>-0.0108 | 0.4446E-01<br>0.0290* | 0.1982E-01<br>0.0338* |
| ADJ R-SQ | 0.0031 | 0.1033 | 0.0303 | 0.0178 | 0.0906 | 0.0598 | 0.4545 | 0.2056 | 0.4028 | 0.2586 |
| NO./CASES | 2105 | 3898 | 3073 | 2628 | 4374 | 4339 | 4381 | 4036 | 4373 | 4402 |

NOTE: Unstandardized coefficients appear in the first row of each pair, and standardized coefficients appear in the second.
*p ≤ .05 ** p ≤ .01 *** p ≤ .001 **** p ≤ .0001

statistically significant and none are large. The signs of those that are significant do not comprise any interpretable patterns. Why a youth who attended a school with work preparation (WKPREPSG) as an important goal of the guidance program would earn a lower wage is not clear. Similarly, why guidance programs emphasizing personal growth and development (GROWTHSG) would help youth to avoid unemployment is difficult to interpret. The negative coefficient indicating the effect of counselor student ratio (COUNSSTU) on weeks worked also is not meaningful, at least in the absence of some pattern of effects involving other variables.

## Summary and Conclusions

The analyses reported here strongly replicate findings of past research regarding the impact of status background and personal characteristics (gender, race, ethnicity) on career expectations and performance measures (tests, grades). These variables also affect college-going behavior and exhibit smaller and more erratic patterns of effects on early labor market variables (hours worked, weeks worked, unemployment, but not wage). The career expectation variables (educational and occupational expectation) and perceived ability to complete college also exhibit strong positive effects on college attendance measures and tend to have negative effects on the work variables. In contrast, general attitudes such as self-esteem and locus of control did not have strong effects on post-high school job or education outcomes.

The analyses here have not attempted to answer the question regarding interdependence of college and work and the effect this dependence may have on the influence of background and lagged career expectations on college and work after high school. In all cases, we have estimated total effects of background on work and college. For example, the coefficient indexing the effect of educational expectation in high school on time spent in college since high school is the sum of the direct effect plus indirect effects operating through the work variables.

In contrast to the strong and consistent effects of background and attitudes, effects of guidance program variables are rather small and exhibit some erratic patterns. Several limitations of the data must be recalled here. First, the data describing guidance describes features of the school a youth attended, not guidance activities to which each youth was exposed during high school. Second, the guidance data were collected in 1984, 2 years after the sophomore cohort (normally) finished high school and 4 years after the senior cohort finished. Third, program features of guidance were described for each school by a single person, the head of the guidance and counseling department or comparable person.

With these limitations in mind, the analyses nevertheless reveal some interesting results. First, youth who attended schools that emphasize counseling (as indicated by student exposure reported by guidance personnel) tend to have higher career goals and attend college more than other youth. Second, youth who attended schools for which the counselor respondent expressed positive attitudes about the guidance program also tend to have higher career goals and college attendance. Anomalously, youth who attended schools that emphasized occupational information had lower growth on test scores than other youth. Several interesting interactions also were found, though none was large. A "strong" guidance program (as indicated by a summary index of many of the guidance program variables) increased the effect of base-year occupational expectations on first follow-up educational expectations. The guidance index also decreases the influence of educational expectation on tests, tends to destabilize perceived college ability, and reduces the influence of test scores on perceived college ability. None of these results are strong, however. Hence, confidence in these must await replication.

The pattern of effects involving the nonguidance variables probably provides more useful insight regarding guidance policy than the analyses of the effect of guidance programs, though the 2 types of effects must be combined to arrive at informed policy. The fact that status background, race, and gender influence career outcomes is a salient finding for guidance programs. One of the goals of guidance might well be to reduce the influence of background on career outcomes, yet no such interactions were found. The findings do indicate that if guidance programs can influence educational expectation, occupational expectation, and perceived ability to complete college, they might be able to help interrupt the flow of influence between generations. The generally weak relationship involving self-esteem and locus of control indicates that these generalized attitudes may not be effective intervention points. Limited evidence that guidance program variables do affect educational and occupational plans and perceived college ability is reported here, but the effects are much smaller than they would have to be in order to reduce the effects of background to a substantial degree. Also, just what effects might be indicative of an effective program is not clear. Should the goal be to raise career aspirations of females and minorities but not others or to increase the dependence of, say, educational expectation on occupational expectation and test scores? These are matters of human judgment and ethics that are not resolved by quantitative data analysis no matter how good the data and the analyses of it.

# CHAPTER 5

# CAREER GUIDANCE PROGRAM QUALITY INDICATORS

Career guidance and counseling programs have been included in secondary schools for several decades. However, with the advent of the "accountability" movement, budget cutting, and the requirements of the Perkins Act, the necessity for determining how well career guidance programs are serving the needs of students is more and more apparent.

As early as 1972, Humes pointed out that "the only programs that can survive are those that can be measured by justifiable criteria" (p. 21). Wiggens (1977) pointed out the following:

> Citing the results obtained by others is simply not enough. If counselors are to survive, every counselor must be willing to demonstrate effectiveness in helping others. Not all things counselors do are measurable, but enough can be measured--or at least inferred from various instruments--so that counselors cannot shirk their evaluation responsibilities. (p. 50)

Lewis (1983) identified over 120 measurement devices for measuring the outcomes of guidance programs in school settings. He also pointed out that, while accountability to others is one reason to evaluate guidance programs, most experts cite the improvement of guidance programs as the primary purpose of evaluation.

Lombana (1985) points to the need for a comprehensive model for evaluating guidance programs. She states that a comprehensive model that is flexible and practical for use in school guidance programs requires the acceptance of two different types of guidance objectives--program and client--and recognition of the value of both empirical and perceptual measures.

A range of efforts to establish standards for career guidance programs and for career counselors have been conducted by professional organizations, by state departments of education, and by local school districts. Some of these efforts are described in the following section.

## Efforts to Establish Guidance Standards

Efforts to establish standards both for guidance programs and for counselors have been underway over the past decade. The efforts of professional organizations, state departments of education, and local school districts are included here. This section is then completed with a description of a national effort on precollege counseling and a project that is just getting underway.

### Professional Organization Efforts

The National Vocational Guidance Association (NVGA), now the National Career Development Association (NCDA), has been active in the establishment of both program standards and counselor standards. A systems approach to developing, implementing, and evaluating career guidance programs was developed by the NVGA Commission on Criteria for Career Guidance Programs and published in 1979.

Then, based on information developed through work described by Phillips-Jones, Jones, and Drier (1981) and by Johnson and Johnson (1982), NVGA identified six areas in which an individual must demonstrate minimum competencies in order to work as a professional engaged in vocational or career counseling. The six areas are: general counseling skills, information, individual and group assessment, management and administration, implementation, and consultations. These counselor competencies were first published in the NVGA Newsletter in 1982 and were republished in the Vocational Guidance Quarterly (National Career Development Association 1985).

The American School Counselor Association (ASCA) issued a series of counselor role statements in the 1970s. The statement for secondary counselors first appeared in 1974, with a revision prepared for publication in 1977. A further revision was prepared and approved by the ASCA Governing Board in 1981 (American School Counselors Association 1981). Four role statements were approved for secondary counselors as follows:

- Organize and implement through interested teachers guidance curricula interventions that focus upon important developmental concerns of adolescents (identity, career choice and planning, social relationships, and so forth).

- Organize and make available comprehensive information systems (print, computer-based, audiovisual) necessary for educational-vocational planning and decision making.

- Assist students with assessment of personal characteristics (e.g., competencies, interests, aptitudes, needs, career maturity) for personal use in such areas as course selection, post-high school planning, and career choices.

- Provide remedial interventions or alternative programs for those students showing in-school adjustment problems, vocational immaturity, or general negative attitudes toward personal growth. (p. 10)

In March, 1984, ASCA adopted the following policy statement on career guidance:

> Career Guidance is a delivery system which systematically helps students reach the career development outcomes of self awareness and assessment, career awareness and exploration, career decision making, career planning and placement. The school counselor's role covers many areas within a school setting and career guidance is one of the counselors most important contributions to a student's lifelong development.

## State-Level Efforts

Most states have developed guidelines and/or standards for career guidance programs that receive federal funding through state distribution processes. The descriptions of five of those efforts that are available in published form follow.

Alaska. A program assessment instrument designed to assess guidance and counseling programs and to provide an informational base for establishing goals was developed for use by administrators, counseling staff members, and community representatives. "Criteria for excellence" included items in the areas of philosophy, leadership, program, personnel, resources, and evaluation (Alaska State Department of Education 1981).

California. The development of a comprehensive guidance and counseling plan was described by Upton (1982). Basic elements of successful programs were identified and included the following:

- Guidance programs should be designed for all students and should provide for continuous developmental activities throughout the students' time in school. These programs should focus on the affective domain of education and could be identified as the guidance curriculum.

- The ideal thrust of pupil personnel programs should be preventive in nature even though crises must be carefully dealt with when they occur.

- Developmental or preventive programs should focus on meeting identified individual needs in a systematic way. Hit-or-miss and drop-in methods are seldom effective.

- Guidance services should be the responsibility of the entire school staff. Guidance specialists have specific responsibilities for providing leadership, consultation, and special skills as needed.

- Guidance specialists should first of all be advocates for students. Therefore, the responsibilities of specialists at times may be to assist the institution to change to meet student needs, and at other times may be to help the student adjust to the institution.

- The guidance specialist should utilize available community resources. Lay people, paraprofessionals, and other community professionals provide services that supplement those provided by the guidance staff. Time should be provided for coordination of these sources of help.

- Career development should be emphasized for all students, not just for students entering the work force after high school. A developmental approach should be undertaken that begins in kindergarten and continues throughout a student's time in school. Students should be encouraged to look at all alternatives open to them in harmony with their abilities, interests, and desired life-styles.

- An effort should be made to help each individual develop an understanding of self and the ability to solve personal problems and relate to others. Attempts should be made to attack the cause of student alienation rather than to attempt to cope with symptoms such as drug abuse, campus conflicts, discrimination, and venereal disease.

- Guidance specialists should be involved in developing goals and objectives for the entire school as well as for guidance programs. They should be involved as well in efforts to make the curriculum and the school atmosphere more consonant with students' needs.

- Guidance specialists should be concerned with helping teachers provide the best possible learning conditions in the classroom as well as inservice training on how children learn.

- Guidance specialists with skills in student assessment should, in addition to assessing learning problems of students and recommending placement in special classes, assist teachers in developing and implementing classroom strategies to prevent these problems and help solve them when they cannot be prevented.

- The guidance program should have specific goals and objectives to be attained by the persons having specific competencies. Evaluation, both short- and long-range, should be an essential part of the program. (pp. 297-298)

Iowa. As a result of studying the quality and stage of development of career guidance programs in secondary schools, recommendations for implementing changes in career guidance in Iowa schools were developed (Engen and Noeth 1983). The study was a cooperative effort of state guidance officials, area education agencies, school district personnel, and counselor educators. Recommendations were based on data analysis combined with the experience and expertise of an advisory committee consisting of the groups mentioned above. The recommendations were as follows:

- A K-12 career guidance program should be need-based; planned, developmental, and sequential; and evaluated as to both short- and long-term goals.

- The Guidance Section of the Department of Public Instruction should compile a notebook of specific (K-12) self-awareness and career guidance activities.

- Decision-making and communication skills should be stressed by blending affective and cognitive domains beginning at the elementary school level.

- Each attendance center should have a career guidance information center and utilize people from the community as resources.

- Career guidance programming should consider the concept of leisure and its effect on individual life-style.

- Career placement centers should be established in secondary schools.

- Age, race, and sex-role stereotyping within all guidance materials and career information should be eliminated systematically in all Iowa schools. (pp. 86-87)

Maryland. Standards for school guidance programs were developed by the Pupil Services Branch of the Division of Compensatory, Urban, and Supplementary Programs of the Maryland State Department of Education (n.d.). Specific criteria for review and examples of acceptable documentation are provided in four areas: philosophy and goals; program planning, organization, and evaluation; delivery of service; and staff effectiveness. The programs in each county are being reviewed on the basis of these standards on a 3-year rotational basis.

New York. To ensure the rights of students in guidance and counseling, the New York State Education Department (1985) listed barriers and activities to overcome barriers. As well as federal requirements (e.g., the Perkins Act), New York State requires that all guidance programs in grades 7-12 provide the following:

- An annual review of each student's educational and career plans (including handicapped and limited-English proficient students)
- Instruction to help students learn about various careers and career planning
- Assistance to enable students to benefit from the curriculum (occupational as well as academic)
- Help to develop and implement postsecondary education and career plans (p. 4)

## Local District Efforts

Many local districts have evaluated their career guidance programs (both formally and informally) and then used the information to develop local guidelines and/or standards. Two published examples follow.

Montgomery County Public Schools. A study of the Montgomery County, Maryland, guidance program received the 1985 American Educational Research Association (AERA) Division H Award for Best Report on Institutional Research (Ebert, Richardson, and Stevenson 1985). Data collection activities included (1) a review of local policies and regulations, and (2) analysis of data from counselor logs, counselor observations, counselor questionnaires, student questionnaires, teacher questionnaires, parent interviews, principal interviews, and surveys of other school districts' guidance and counseling programs.

The findings indicated that the guidance and counseling program in the Montgomery County Public Schools required significant modifications in structure and management. Changes needed in structure centered on the development of a countywide guidance and counseling program, clarification of the counselors' role and responsibilities at each school level, provision of additional professional support and consultation, and improvement in the monitoring system. Recommended changes in management involved the establishment of an administrative structure that would provide for the implementation of each of the functions and do so in the most efficient manner. The authors of the report stressed that the recommended changes should be viewed as a total package of interdependent parts. They pointed out that adopting changes selectively would probably be counterproductive.

*Dublin Local School District*. The Dublin, Ohio, schools adopted a competency-based guidance plan in 1985. It is based on a requirement in the Ohio Revised Code that school guidance services shall be provided for pupils in kindergarten through twelfth grade in accordance with a written plan adopted by the board of education. The Guidance Planning Committee established a means to assess the district's guidance services for administrators, counselors, teachers, parents, and students.

The competency-based approach shifts attention away from what counselors do to a focus on student development and student learning outcomes--on knowledge, skills, and on the understanding of self and others that students acquire as a result of their participation in guidance programs. Counselors will develop instructional content, coordinate it with the academic curriculum, teach it to students, assess student learning, and follow up on student attainment of the designated competencies. The designated competencies are in four major areas: personal and social planning, educational planning, career and occupational planning, and leisure planning. The plan shifts emphasis from counselor tasks to student learning, from individual to group counseling, from crisis intervention to preventive instruction, and from information processing to information dissemination.

### Recent Commission Effort

The Commission on Precollege Guidance and Counseling, established by the College Entrance Examination Board, published its final report in October 1986. The Commission's four priority recommendations for action in the schools could easily apply to career guidance programs generally, not just to programs concerned with precollege guidance. The four priority recommendations are as follows:

- Establish a broad-based process in each local school district for determining the particular guidance and counseling needs of the students within each school and for planning how best to meet these needs.

- Develop a program under the leadership of each school principal that emphasizes the importance of the guidance counselor as a monitor and promoter of student potential, as well as coordinator of the school's guidance plan.

- Mount programs to inform and involve parents and other members of the family influential in the choices, plans, decisions, and learning activities of the student.

- Provide a program of guidance and counseling during the early and middle years of schooling, especially for students who traditionally have not been well-served by the schools. (pp. 5-6)

The Commission also made four other major recommendations that involve a variety of actors and institutions outside the schools and that provide essential support for school-based changes. The four major recommendations are as follows:

- Strengthen collaboration among schools, community agencies, colleges, businesses, and other community resources to enhance services available to students.

- Establish a process in each state to determine the guidance and counseling needs of specific student populations and give support to local initiatives that address these needs.

- Increase support of federal programs that help disadvantaged students to enter and remain in college.

- Revise the training of school counselors to include the specific skills and knowledge necessary to enable them to take a more central role in schools. (p. 6)

## Current National Effort

The National Occupational Information Coordinating Committee (NOICC) has initiated a project to develop guidelines from which state and local schools will be expected to set program delivery standards (Cook 1986). The grant recipient of the project is the North Dakota Occupational Information Coordinating Committee (NDOICC).

Project staff will do a national search for student outcome driven standards already in place at the state or local levels and identify local sites where career development already is an "educational program" for which desired outcomes are explicit and measured.

## Data-based Program Quality Indicators

To assist in the efforts to develop guidelines and standards for comprehensive career guidance programs, the following quality indicators are based on the data analyses described in this report. Comprehensive high school career guidance programs that lead to positive measurable outcomes for students should--

- keep options open for all students, regardless of family status, race, gender, and students' perceptions of themselves;
- focus on the educational aspirations, occupational aspirations, and perceived ability for postsecondary education of the students rather than general attitudes such as self-esteem and locus of control;
- give concern to how student employment during high school affects the chances of the student after high school;
- emphasize career planning;
- provide individual and group counseling and other interventions;
- provide opportunities to students to enhance their performance on standardized tests;
- provide a program that will enable counselors to develop favorable attitudes toward the career guidance program;
- be based on a written plan for the program.

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